Kalkhoff
MyBike

Original User Manual

English

General Original User Manual

Original User Manual | Pedelec with centre motor

Original User Manual | Pedelec Impulse

Original User Manual | Pedelec Impulse Ergo*

Original User Manual | Pedelec Impulse Speed*

Original User Manual | Pedelec Groove*

Original User Manual | Pedelec Xion

Original User Manual | Bosch Performance Line

Original User Manual | Bosch Active Line

* Not included in this document.

Derby Cycle Werke GmbH 2013

Kalkhoff
MyBike

I

General User Manual

English

Derby Cycle Werke GmbH 2013

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2 Handlebar stem
3 Bell
4 Headset
5 Front light
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2 Preface

Your bike has been delivered to you fully assembled.
If parts of your bike have not been installed, please consult your specialist cycle shop.

The purpose of this User Manual is to help you use your bike safely in the manner for which is is intended, and enjoy all its benefits for many years to come. We assume that you have general knowledge on the handling of bikes.

Every person who uses, cleans, maintains or disposes of this bike must have read and understood the entire content of this User Manual.

In addition to texts, tables and lists, the User Manual contains the following symbols that denote important information or dangers.

WARNING about possible physical injury, increased risk of falls or other injuries

IMPORTANT ADDITIONAL INFORMATION or special information on using the bike

NOTE about possible damage to property or the environment

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4 Safety information

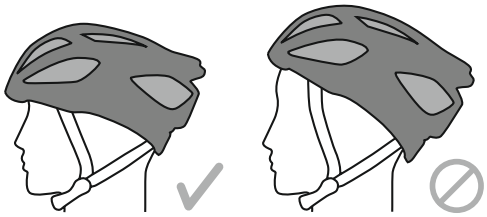
4.1 Basic safety information

Please read all the warnings and information in this User Manual carefully before using the bike. Keep this User Manual near your bike for ready reference.

If you hand this bike over to someone else, don't forget to give them the User Manual as well.

4.2 For your own safety

- Always use a suitable bicycle helmet and wear it correctly.



- Wear bright clothing or reflective elements so that other road users can see you in good time.
- Wear shoes with a stiff, and whenever possible, non-slip sole.
- Wear close-fitting clothing on your legs, or wear trouser clips.
- Wear protective clothing such as robust shoes and gloves.

4.3 Information for parents and legal guardians

- Make sure that your child has been taught, and also understands, how to handle the bike safely and responsibly in the environment in which it is going to be used.
- Explain to your child how to operate all the brakes, and also how they work and any special features. For further important information on this matter, refer to ➠ ***Chapter 21 "Brake, brake levers and brake systems"***.
- As the legal guardian, you are responsible for the safety of your child and any damage he/she may cause when cycling. You should therefore make absolutely sure that the bike is in technically sound condition and adjust it regularly to the size of the child.

4.4 Safety in road traffic

- Observe the applicable traffic regulations.
- Never ride with no hands!
- In some countries children below a certain age must ride on the pavement and must also dismount when crossing the road. Please familiarise yourself with the applicable regulations.
- Adjust your handling on wet or slippery roads; ride more slowly and brake carefully and in good time as you will require a much greater braking distance.
- Adopt a speed that reflects the terrain as well as your riding ability.
- Do not listen to music through headphones when cycling.
- Do not cycle when using a mobile phone.
- Use designated cycle paths when not using public roads.

› Be ready to brake, especially if you are not sure what lies ahead or are riding downhill.

4.5 Bike safety

› Only bikes that have been approved for use in public places, as per the applicable regulations (e.g. StVZO in Germany), may be used.

› Observe the maximum permitted gross weight of the various bike types, as this could otherwise lead to breakage or failure of safety-relevant components. The brake system is also only designed for the maximum permitted gross weight of the bike. For a list of the maximum permitted gross weights, refer to ➠ ***Chapter 30 "Technical data"***.

ⓘ The gross weight is the sum of the weight of the bike + weight of the rider + weight of the luggage. The gross weight also includes towed weights such as trailers.

› If you notice that a part is damaged or warped, do not use the bike until you have had the part replaced as otherwise parts that are important to operation of the bike may fail.

› Observe the maximum load-carrying capacity of the pannier rack. This is marked on the pannier rack directly (also refer to ➠ ***Chapter 30 "Technical data"***).

› Have maintenance and repairs carried out by a professional bike workshop (for maintenance intervals, refer to ➠ ***Chapter 28 "Regular inspections"***).

› If you make technical changes to your bike, take the national traffic regulations and applicable standards into account. Bear in mind that this could render your warranty invalid.

› Only replace electrical components on your bike with type-tested parts.

› Only ride with suitable lighting in unfavourable lighting conditions such as fog, rain, dawn/twilight or in the dark.

Bear in mind that with intensive use of your bike wear increases accordingly. Many bike parts, particularly on light sports bikes, are only designed for a specific period of use. If this is exceeded, there is a considerable risk that components could fail.

Perform care and maintenance on your bike regularly. In doing so, check important components, particularly the frame, fork, wheel suspension, handlebar, handlebar stem, seatpost and brakes for warping and damage. If you notice changes such as cracks, bulges or warping, have your bike checked by a specialist cycle shop before using again.

5 Legal provisions

If you wish to use your bike in road traffic, make sure that your bike complies with the road traffic regulations. If necessary, observe ➠ ***Chapter 22.2 "Special regulations for road bikes"***.

5.1 Applicable road traffic licensing regulations

Before you take your bike on the road, find out what the relevant national regulations in your country are – in Germany, these are the Road Traffic Licensing Regulations (StVZO) and the Road Traffic Ordinance (StVO).

In Switzerland, the applicable regulations can be found in the Ordinances relating to Technical Requirements for Road Vehicles, Articles 213 to 218.

If you wish to ride in road traffic in Austria, you must observe Ordinance 146 / Bicycle Ordinance.

Make sure each time you use your bike that it actually is in the prescribed roadworthy condition, that the brakes are properly adjusted and that the bell and lighting set comply with the relevant regulations in your country, in Germany these are the Road Traffic Licensing Regulations (StVZO).

In some EU countries, battery-operated front lights and rear lights may only be used by road bikes weighing less than 11 kg. They must always be carried and have an official approval (sinuous line and K number). All other bikes must use dynamo lighting sets. Every component of the system must carry the official test mark which identifies it as "approved". The applicable regulations in your country apply in this regard, e.g. the Road Traffic Licensing Regu-

lations (StVZO) in Germany. When performing technical modifications, bear in mind that electrical components must only be replaced by type-tested components.

6 Intended use

6.1 General information

Bikes are a means of transportation for one person. In some countries, regulations exist governing the carrying of passengers, such as the Road Traffic Ordinance (StVO) in Germany (tandem or bike child seat).

If you wish to carry luggage, you will require a suitable fixture on your bike. Bear in mind the maximum load-bearing capacity of the carrier (see ➠ ***Chapter 30 "Technical data"***).

Not every bike type is suitable for every surface. Bikes are not designed to cope with extreme stresses such as jumping or riding over steps.
You must not take part in competitions with your bike. The only exceptions to this are bikes that are offered explicitly for use in competitions.

The information in this User Manual applies for all bike types.

Any deviations for individual bike types are identified accordingly.

Observe the relevant user manual from the individual component manufacturers which can be found on the CD or in the Internet. If you have any questions once you have read the documentation, your specialist cycle shop will be pleased to provide assistance.

Intended use also includes compliance with the operating, maintenance and repair instructions provided in this User Manual.

The manufacturer and cycle shop will not accept liability claims should the bike not be used as intended.

6.2 Trekking bike / all-terrain bike (ATB), if equipped in accordance with the applicable road traffic licensing regulations

You may use these bikes on surfaced routes and in road traffic, providing they are equipped accordingly. They are also suitable for gentle offroad riding, such as on country lanes.

The manufacturer and cycle shop will not accept liability claims should the bike not be used as intended. This particularly applies for non-observance of the safety information and damage resulting for example from:

- overloading or
- incorrect repairs.

6.3 City, touring, sports, child's and youngster's bike, if equipped in accordance with the applicable road traffic licensing regulations

You can use these bikes in road traffic and on surfaced routes.

The manufacturer and cycle shop will not accept liability claims should the bike not be used as intended. This particularly applies for non-observance of the safety information and damage resulting (for example) from:

- offroad use,
- overloading or
- incorrect repairs.

6.4 Mountain bike (MTB) / cross bike

You can use these bikes offroad. You must not use these bikes in road traffic or competitions. If you wish to use your bike on public roads, it must have the requisite equipment features (see ➠ ***Chapter 5 "Legal provisions"***).

The manufacturer and cycle shop will not accept liability claims should the bike not be used as intended.

This particularly applies for non-observance of the safety information and damage resulting for example from:

- use in competitions,
- overloading,
- incorrect repairs.
- riding over steps,
- jumping,
- riding through deep water
- extreme stresses on non-designated MTB routes or MTB courses.

6.5 Road bike / fitness bike

You may use these bikes on public roads for training purposes. You may use road bikes weighing up to 11 kg without permanently fitted dynamo lighting. If you choose to do so, you must carry a battery-operated front light and a rear light. If the light has the required approval, there will be an embossed sinuous line and K-number on it.

When using road bikes that weigh more than 11 kg in road traffic, the required equipment features must be installed. Please familiarise yourself with the applicable regulations.

The bike is exempt from these requirements for the duration of officially approved cycling events.

The manufacturer and cycle shop will not accept liability claims should the bike not be used as intended. This particularly applies for non-observance of the safety information and damage resulting for example from:

- offroad use,
- overloading,
- incorrect repairs or
- use in competitions,

6.6 BMX

These bikes are designed for BMX routes and/or BMX practice facilities.

In some EU countries, they are not approved for use in road traffic, e.g. by the Road Traffic Licensing Regulations (StVZO) in Germany, and in this case must not be used for this purpose (see ➠ ***Chapter 5 "Legal provisions"***).Always wear a helmet and protective clothing, such as elbow and knee pads.

The brakes normally installed on BMX bikes produce a less effective braking action. You should therefore bear in mind that this increases the braking distance, especially in wet conditions. Please test this thoroughly in a safe location and always adjust your handling accordingly.

The manufacturer and cycle shop will not accept liability claims should the bike not be used as intended.

This particularly applies for non-observance of the safety information and damage resulting for example from

- use in competitions,
- overloading,
- incorrect repairs.
- riding over steps or
- jumping.

7 Before the first ride

Make sure that your bike is ready for use and is set up for your body size.

Check the following:

- Positioning and secure fastening of saddle and handlebar
- Installation and correct adjustment of the brakes
- Secure fastening of wheels in frame and fork

Adjust the handlebar and stem until you find a safe and comfortable riding position. Instructions on how to adjust the handlebar are provided in ➠ ***Chapter 9.3 "Adjusting the handlebar position"***.

Adjust the saddle until you find a safe and comfortable riding position. Instructions on how to adjust the saddle are provided in ➠ ***Chapter 9.2 "Adjusting the seat position"***.

Make sure the brake levers are always within easy reach and that you know how to operate the right/left brake levers and where to find them. Make a note of which brake lever operates the front and which the rear wheel brake.

Modern brake systems can have a far more powerful and different braking effect than those you are already familiar with. Before setting off, familiarise yourself with the effects of the brakes on a safe traffic-free area.

If you are using a bike with carbon-fibre rims, bear in mind that the braking behaviour of this material is much poorer than aluminium rims.

Make sure that the wheels are securely fastened in the frame and forks. Check that the quick-release device and all important fastening screws and nuts are securely fastened.

➠ ***Chapter 9.2.2 "Operating the quick-release device"*** contains instructions on how to operate quick-release devices safely and ➠ ***Chapter 30 "Technical data"*** contains a table of the tightening torques for important screws and nuts.

Check the tyre pressure. Information on the prescribed tyre pressure appears on the tyre sidewall.

Never inflate the tyres to less than the minimum or more than the maximum specified tyre pressure. As a rule of thumb, e.g. when on the road, you can check the tyre pressure as follows: If you press your thumbs into the inflated tyre, there should not be much give in the tyre even if you press hard.

Check the tyres and rims for damage, foreign bodies, e. g. glass fragments or sharp stones and deformation.

If cuts, cracks or holes are visible, do not ride off. Instead, take your bike to a professional bike workshop and have it checked.

8 Before every ride

Although a great deal of care has been taken during production and assembly, parts may still come loose or change function during transportation for example.

You should therefore always check the following before every ride:

- Bell and lighting are working properly and securely fastened
- Brake system is working properly and securely fastened
- If a hydraulic brake is fitted to your bike, make sure the lines and connections are tight
- Check the tyres and rims for damage and foreign bodies and check the wheel runs true, especially after riding offroad
- Sufficient tread depth on the tyres
- The suspension elements are in working order and are securely fastened
- Screws, nuts and quick-release devices are secure
- Frame and fork for deformation and damage
- Handlebar, handlebar stem, seatpost and saddle in the correct position and safely and properly secured

If you are not sure whether your bike is in a technically sound condition, do not ride it and have it checked by a professional bike workshop instead.

9 Setting up the bike for the rider

Road bikes or mountain bikes can also be supplied without pedals.

Proceed as follows if you wish to fit pedals to your bike yourself:

9.1 Fitting the pedals

› Coat both pedal threads with lubricant (grease).

The left pedal has a left-handed thread which is normally indicated by an "L" embossed on the axle. The right pedal has a right-handed thread which is normally indicated by an embossed "R".

Axle with **right** pedal thread

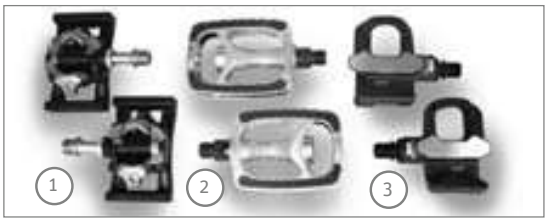
Axle with **left** pedal thread

› Screw the left pedal anticlockwise into the left crank.

› Screw the right pedal clockwise into the right crank (on the side of the bike chain).

› Tighten both pedals using a suitable size 15 open-ended spanner or Allen key. Tighten all screws to the prescribed torque (➠ ***Chapter 30 "Technical data"***). If you do not do this, the pedals may come loose.

Make sure you fit or screw in the pedals straight, as otherwise you could damage the thread in the crank arm beyond repair.



1 MTB system pedals
2 Touring or sports pedals
3 Road bike system pedals

Only use the designated cleats and shoes for MTB, racing and system pedals. If you use other cleats/ shoes you may slip out of the pedals.

Riders who are inexperienced in the use of MTB system pedals or road system pedals, also referred to as click pedals, are vulnerable to falls with potentially serious consequences. If you use system pedals, practise clicking into the pedal and releasing the shoe from the pedal when the bike is stationary. Never practise this in road traffic.

Read the user manual of the pedal and shoe manufacturer.

You can also find more information on this subject in the Internet. A list of links is provided in ➠ ***Chapter 29 "Link list"*** .

9.2 Adjusting the seat position

9.2.1 Adjusting the bike saddle

The seat position is decisive for your well-being and cycling performance.

› Do not remove or change the seatpost or saddle clamp. If you change or modify components, this renders the warranty invalid.

› Tighten all screws to the prescribed torque as otherwise screws could shear off and components could come loose or detach altogether (see ➠ ***Chapter 30 "Technical data"***).

Only work on the bike if you have the correct tools and requisite knowledge. Always have complex or safety-relevant work carried out by a specialist cycle shop.

9.2.2 Operating the quick-release device

› All quick-release devices must be tightened securely before you set off. Check this before every journey.

› If you leave your bike unattended, check that all quick-release devices are correctly secured before setting off again.

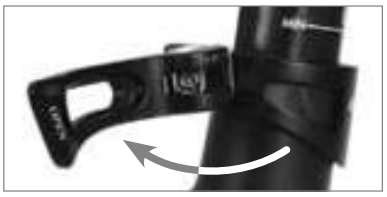
› When closing the quick-release lever to lock it, it must be necessary to apply a force that causes you to make a fist with your hand as otherwise the quick-release device could come loose.

Quick-release device

1 Quick-release lever
2 Adjusting nut

To open the quick-release device, proceed as follows:

› Throw back the quick-release lever so that its inner face or the lettering OPEN is visible.



› Open the quick-release device as far as possible.

› Turn the adjusting nut anticlockwise to further slacken the quick-release device.

To close the quick-release device, proceed as follows:

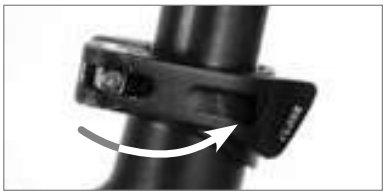
› Adjust the clamping strength by turning the adjusting nut.

› If the quick-release device closes too easily, open it again and turn the adjusting nut clockwise.

› If the quick-release device still closes too easily, repeat the previous step.

› If the quick-release device is too difficult to close, turn the adjusting nut anticlockwise.

› Turn back the quick-release lever from the OPEN position so you can see the outer side of the lever or the lettering CLOSE.



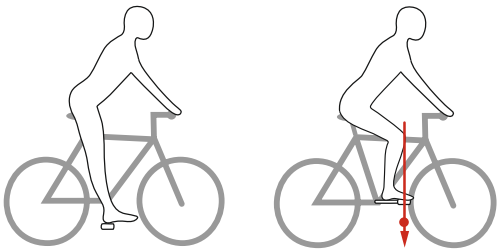
› When closed, quick-release levers must lie flat against the frame, fork and saddle clamp. Make sure that quick-release devices for the hubs point backwards when closed as otherwise they could snag on obstructions when the bike is moving and open. This could lead to serious accidents.

9.2.3 Determining the correct saddle height

› Sit on the bike saddle.

› Try to reach the pedal with your heel when it is in the bottom position. Your knee should be more or less fully straightened out.

› Place the balls of your feet on the centre of the pedal. If your knee is now slightly bent, the saddle height is correct.



Never tighten the seatpost if the maximum mark or stop mark is above the top of the seat tube as otherwise you could injure yourself or damage the seatpost. Always observe the specified tightening torques.

In full-suspension mountain bikes the seat tube is also open at the bottom, so the seatpost should only be inserted a certain distance downwards to ensure the rear swing arm and suspension element never come into contact when the bike is in use.

The minimum insertion depth is marked on the seatpost. If this is not the case, the minimum insertion depth must be 7.5 cm. In frames with long seat tubes that project beyond the top tube, the minimum insertion depth is 10 cm.

Observe stop mark.

9.2.4 Adjusting the saddle angle

- Your bike saddle should be as close as possible to horizontal.
- You can make use of longer bike rides to find out what your most comfortable seat position is. If you want to tilt the saddle, try tilting it very slightly forwards. If you tilt the saddle back, this can quickly lead to pain or physical injury.

Adjust the saddle angle as follows:

- Turn the clamping screw anticlockwise to loosen it.
- Tilt the bike saddle to the required angle.
- Turn the clamping screw clockwise to tighten it. (For tightening torques see ➠ ***Chapter 30 "Technical data"***).

Adjusting the saddle angle

9.2.4.1 With a two-bolt seatpost

Some seatposts have two screws for adjusting the saddle angle, one in front of and one behind the seat tube. If you want to tilt the saddle forwards, loosen the rear screw with an Allen key and tighten the front screw by the same number of revolutions. To tilt the saddle backwards, loosen the front screw and tighten the other to the same degree. Then retighten both screws observing the correct tightening torque (see ➠ ***Chapter 30 "Technical data"***).

Two-bolt seatpost

9.2.4.2 With a seatpost saddle clamp

If the saddle is attached to the seatpost by a clamp, the clamping nut will be at the side. Adjust the saddle angle as follows:

- Turn the clamping nut anticlockwise to loosen it. You may need to counter the nut on the other side using another wrench.
- Tilt the bike saddle to the required angle.
- Turn the clamping nut clockwise to tighten it. You may need to counter the nut on the other side using another wrench. Use the correct tightening torque (see ➠ ***Chapter 30 "Technical data"***).

Seatpost saddle clamp

9.2.4.3 With a suspension seatpost

Suspension seatposts reduce vibrations caused by uneven roads thereby reducing stress on the spinal column.

If you need to adjust the suspension elements in the seatpost, consult your specialist cycle shop.

Suspension seatpost

9.3 Adjusting the handlebar position

Tighten all screws to the prescribed torque as otherwise screws could shear off and components could come loose or detach altogether (see ➠ ***Chapter 30 "Technical data"***).

You can also influence your riding position by changing the handlebar height.

The lower you set the handlebar, the further you will have to lean forwards. This increases the strain on your wrists, arms and upper body and you will need to bend your back further.

The higher the handlebar is, the more upright your riding position will be. This increases the stress on your spinal column due to jolting.

You can determine a handlebar height that best suits your body size as follows:

› Sit on the bike saddle.

› Ask another person to hold the bike steady if required.

› Bend your upper body towards the handlebar until you have found a position that is comfortable for your back.

› Stretch out your arms towards the handlebar.

› Note the approximate position of your hands and set the handlebar at this height.

9.3.1 Adjusting / aligning the handlebar height with a conventional handlebar stem

To release the stem shaft in the head tube, proceed as follows:

› Release the stem expander bolt to loosen the handlebar stem. Turn it anticlockwise by two or three revolutions using an Allen key.

› Clamp the front wheel between your legs to prevent the bike fork from turning with the stem shaft.

› Holding the handlebar by the handles, turn it from right to left and vice-versa.

› If it is not possible to do this, tap lightly on the stem expander bolt with a plastic hammer to loosen the clamping fixture inside the stem.

› Set the handlebar stem to the required height.

› Align the handlebar so that it is exactly at right angles to the front wheel.

› To secure the stem shaft again, turn the stem expander bolt clockwise using an Allen key until it is tight (see ➠ ***Chapter 30 "Technical data"***).

Never tighten the handlebar stem if the maximum mark or stop mark is above the top of the shaft. If you cannot find a mark, insert the handlebar stem into the head tube to a depth of at least 6.5 cm. If you do not do this, the handlebar stem could come loose or break.

9.3.2 Adjusting the handlebar height with A-head systems

With the A-head stems shown here, the handlebar height must be adjusted by a professional bike workshop.

9.3.3 Aligning handlebars with A-head systems in relation to the front wheel

To align the handlebar with the front wheel, proceed as follows:

› Loosen the hexagon socket screws on the rear of the handlebar stem by turning them anticlockwise with an Allen key.

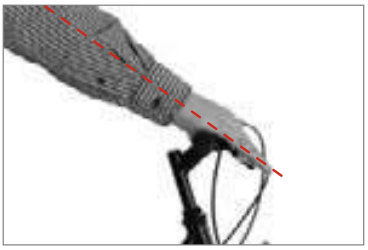
› Turn the handlebar so that it is exactly at right angles to the front wheel.

› Tighten the hexagon socket screw by turning it clockwise with an Allen key (see ➠ ***Chapter 30 "Technical data"***).

9.3.4 Adjusting the handlebar position by turning the handlebar

Loosen the hexagon socket screws on the front of the stem. Turn the handlebar until you find the position that is comfortable for you. Make sure that the handlebar is always exactly in the centre of the stem. Now retighten the hexagon socket screws by turning them clockwise. If the tightening torque is stamped on the stem, use this value, and if not, use the tightening torques in ➠ ***Chapter 30 "Technical data"***.

Once you have adjusted the handlebar, you will also need to adjust the brake levers and gear-shift handles. Loosen the hexagon socket screws on the handle grips. Sit on the saddle and put your finger on the lever. Turn the lever until your hand and lower arm are in a straight line. Retighten the screws in the handle grips by turning them clockwise. (For tightening torques see ➠ ***Chapter 30 "Technical data"***).



9.3.5 Adjusting the handlebar height with an adjustable handlebar stem

With some types of handlebar stems, you can vary the handlebar tilt. The stem angle can be adjusted via the clamping screws which are on the side of the articulation or the top/bottom of the stem. Models equipped with additional stop notches or adjusting screws are available.

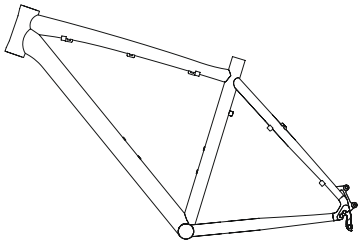
Hexagon socket screw (integrated stop notch)

Adjust the handlebar tilt as follows:

- Undo the clamping screw by turning it anticlockwise through two or three revolutions using an Allen key.
- If you own a model that is also equipped with detents, continue turning the clamping screw anticlockwise to disengage the detents.
- If you own a model with integrated stop notch, loosen the screw of the stop notch. In many stem types this is located on the underside of the stem.
- Tilt the handlebar stem to the required angle.
- To fasten the handlebar stem, tighten the clamping screw clockwise using an Allen key . If tightening torques are specified on the stem, use exactly these torques, and if not, refer to the table of tightening torques in ➠ ***Chapter 30 "Technical data"***.
- In models with an integrated stop notch, tighten the screw of the stop notch carefully clockwise. In doing so, the stop notch must engage with the teeth.

10 Frame

The form of the frame depends on the bike type and function. Frames are manufactured from different materials – steel or aluminium alloys or carbon (carbon fibre), for example.



The frame number of the bike is stamped on the seat tube, the dropout or the bottom bracket housing.

It may also be found on the motor suspension in Pedelecs. The bike can be identified by the frame number if it is stolen. To identify the bike properly, it is important to note down the whole number in the right order.

Never ride your bike if the frame is warped or cracked. On no account should you attempt to repair damaged parts. This can lead to accidents. Replace defective parts before you ride the bike again.

After an accident or crash, have your bike checked by a professional bike workshop before riding it again. If defects on the frame or components go unnoticed this can lead to accidents.

If your bike does not roll forwards easily in a straight line, this could mean that the frame is warped. In this case, have the steering stability checked by a professional bike workshop.

11 Headset

Headset

The headset is the bearing for the bike fork in the frame. If the headset has been properly adjusted, it will turn easily. In doing so, no play should be evident.

The headset is subject to a large amount of stress due to impacts with the road surface. This can cause it to come loose or affect its setting. Have the play and ease of movement of the headset checked regularly by your specialist cycle shop (for inspection intervals see ➠ ***Chapter 28.1 "Inspection schedule"***).

Checking the headset

If you do not adjust the headset properly or tighten it too tightly, this could cause breakages. This should therefore always be carried out by a professional bike workshop.

If you ride with the headset loose, this could damage the bearing shells or fork.

12 Fork

The front wheel is held in place by the bike fork. The bike fork consists of two fork blades, the fork crown and steering tube.

Carbon fork

Suspension fork

The suspension fork is a feature of most mountain bikes, trekking bikes and city bikes. They can be adjusted in different ways and provide a greater degree of riding comfort.

For information on the function, maintenance and care of suspension elements, refer to ➠ ***Chapter 13 "Suspension frame and suspension elements"***. Specific information on your suspension fork is provided in the manufacturer's operating instructions which you can find on the CD or the manufacturer's website.

Never ride with a damaged bike fork. Do not attempt to repair a defective bike fork. This can lead to serious accidents. If you notice that the bike fork is warped or otherwise damaged, replace it before using the bike again.

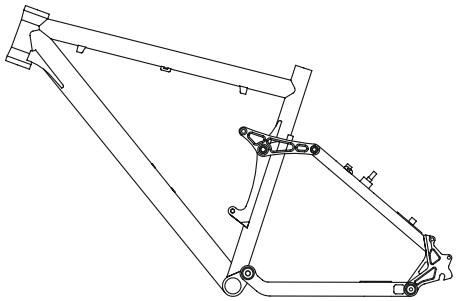
Avoid sudden changes in ground level and riding off high kerb stones. This can damage the fork and lead to serious accidents.

Check regularly that the screws on the bike fork are securely fastened. If screws are allowed to come loose, this can cause serious accidents.

13 Suspension frame and suspension elements

13.1 Frame with rear suspension

If you wish to ride offroad in a particularly sporty manner or with a high degree of comfort, you may have opted for a full-suspension model. In this case, the rear triangle of the main frame is not rigid; instead it can move and is spring mounted and damped by a shock absorber.



Full-suspension frame

Different types of suspension elements are used. These are mainly shock absorbers equipped with a steel spring or an air chamber whose air is compressed due to the action of the suspension. In high-quality shock absorbers, the damping action, that regulates the speed of compression and rebound, can be adjusted. This task is performed by a system of oil chambers and ducts.

Although this type of shock absorber offers a higher degree of riding safety and comfort, it requires special handling. This User Manual contains only general information in this regard. Detailed information and advice is provided in the instructions from the shock absorber manufacturer enclosed with the CD and can also be obtained from your specialist cycle shop.

The website of the relevant suspension element manufacturer may also prove to be a valuable source of information. Informative and helpful links are provided in ➠ ***Chapter 29 "Link list"***.

Your specialist cycle shop should have adjusted the suspension for you before handing over your new bike. Your bike and the seat position may look different to what you are used to, and may also feel different when you are riding. The spring strut must be tuned so that it has a soft response, but does not strike through if you ride over an obstruction. It must give slightly when you sit on your bike.

13.2 Care and maintenance

You can clean your full-suspension MTB in the usual manner. Hot water with a little washing-up liquid or a gentle detergent which you can obtain from your specialist cycle shop are suitable for this.

You should avoid using a high-pressure cleaner to clean your bike as the cleaning fluid can also enter sealed bearings due to the high pressure and damage them beyond repair.

You should carefully wipe down the piston of the shock absorber and the seal with a soft cloth as part of your regular bike maintenance. If you spray a little spray oil, e.g. from Brunox, on the running surface of the shock absorber and the seal, this increases its performance and service life.

You should regularly check the articulations of the rear triangle for play. To do this, lift the wheel and try to move the rear wheel sideways.

You can detect play in the mounting bushes of the shock absorber by lifting the rear wheel up and setting it back down quickly. If you sense play or hear a rattling noise, have your bike checked immediately by a professional bike workshop.

Your safety depends to a large extent on whether the suspension elements are securely fastened and are working correctly. You should therefore regularly look after and inspect your full-suspension bike.

› Tighten all screws to the prescribed torque as otherwise screws could shear off and components could come loose or detach altogether (see ➠ ***Chapter 30 "Technical data"***).

14 Bottom bracket and cranks

Chainrings are wear parts. Their service life depends on various factors, e.g.

- maintenance and care,
- type of use and
- distance travelled.

15 Checking the bottom bracket

The cranks must be securely fastened as this could otherwise damage the crankset.

› The cranks can come loose which is why you should regularly check whether they are securely fastened by attempting to rock them to and fro.

› If there is play in the cranks, have the bike checked and the cranks fastened securely by a professional bike workshop .

If your bike has a carbon frame and a bottom bracket housing for a BB30 bottom bracket please note the following:

In this case you can fit an adapter so that a bottom bracket with conventional BSA thread can be used. However, bear in mind

- You can only install the adapter if the frame is completely undamaged. Repairing a defective BB30 housing serves no purpose. If it is not installed correctly, the bottom bracket housing may be damaged which would render the warranty void. This kind of adapter should only be fitted by a specialist cycle shop.
- Once the adapter has been fitted in the carbon frame it cannot be removed.

16 Wheels

16.1 Checking the wheels

The wheels connect the bike with the surface you are riding on. The wheels are subject to a particularly high level of stress due to unevenness of the riding surface and the weight of the rider.

The wheels are carefully checked and trued prior to delivery. However, the spokes may settle when you ride the first kilometres on your bike.

› Have the wheels checked again and trued if necessary after the first 100 kilometres by a specialist cycle shop.

› You should subsequently regularly check the tension in the spokes and have loose or damaged spokes replaced, and/or have the wheel trued, by a specialist cycle shop.

The wheel can be attached to the frame and fork in a number of different ways. In addition to the standard systems in which the wheel is held on by axle nuts or quick-release devices, different types of floating axles exist. These can be held in place by a screw connection or different types of quick-release devices. If your bike has a floating axle, please also refer to the enclosed manufacturer's user manual or visit the web pages of the relevant manufacturer in the Internet.

Tighten all screws to the prescribed torque as otherwise screws could shear off and components could come loose or detach altogether (see ➠ ***Chapter 30 "Technical data"***).

16.2 Checking the hubs

To check the hub bearings, proceed as follows:

› Lift the wheel and spin it.

› Check whether the wheel continues to turn through several revolutions before it stops moving. If it stops suddenly, the bearing is damaged. This does not apply for front wheels with hub dynamos.

› To determine whether there is play in the hub bearing, try rocking the wheel in the bike fork or rear

triangle backwards and forwards perpendicular to the direction of travel.

› If you notice that there is play between the bearings or if you encounter resistance when turning the wheel, have the hub bearing adjusted by a specialist cycle shop.

16.3 Checking the rims

If you are using a rim brake, the rim is subject to a higher degree of wear.

If a rim is worn it loses stability which makes it more susceptible to damage. If the rim is deformed, cracked or broken this can lead to serious accidents. If you notice changes in a rim on your bike, do not ride on it. Have the problem checked by a professional bike workshop.

Rims for bikes with wheel sizes greater than 24" are supplied with a rim wear indicator. These rims have a characteristic curve or groove that runs round the entire circumference.

Replace the rim as soon as you notice marks (grooves, coloured spots) in one location on the rim, if an embossed marking has disappeared or if a coloured marking has worn down.

If the marking consists of a groove or several points on the rim side wall, have the rim replaced as soon as it wears off.

17 Tyres and inner tubes

17.1 Tyres

A large number of different tyre types exist. The bike's offroad capability and rolling resistance depend on tread profile.

Only inflate the tyre to the maximum permissible tyre pressure as otherwise it may burst.

Inflate the tyre at least to the specified minimum air pressure. If the tyre pressure is too low, the tyre may detach from the rim.

The maximum permissible tyre pressure, and normally also the minimum permissible pressure, can be found on the tyre sidewall.

Always replace the tyre with a tyre of the same type, dimension and profile as otherwise the ride characteristics may be adversely affected. This can lead to accidents.

Tyres are wear parts. Check the tread depth, tyre pressure and condition of the tyre sidewalls regularly. Replace worn tyres before using the bike.

Note the dimension of the fitted tyre. Standard designations are used when stating the tyre dimension.

- *Example 1:* "46-622" means the tyre is 46 mm wide and the rim diameter is 622 mm.
- *Example 2:* "28 × 1.60 inches" means that the tyre diameter is 28 inches and the tyre width is 1.60 inches.

The tyre pressure is frequently stated in PSI. ➠ ***Chapter 30 "Technical data"*** contains a table which you can use to convert tyre pressures from PSI into bar.

17.2 Tubeless tyres

Tubeless tyres are also used nowadays, especially with modern mountain bikes, but also with road bikes to a lesser extent. Although the offer a number of benefits, they must be used and handled with caution.

Only use tubeless tyres on suitable rims. These are identified accordingly, e.g. using the abbreviation "UST".

Only use tubeless tyres of the prescribed type and in the prescribed manner, with the right tyre pressure and, if applicable, using the recommended sealing fluid.

Tools must not be used to remove tubeless tyres from the rim as otherwise leaks may subsequently occur. If the sealing fluid does not remedy the defect, the valve can be removed and a normal inner tube used.

17.3 Tubed tyres

Tubed tyres are also used, particularly on bikes used in sports competitions. With this tyre type, the inner tube is sewn into the casing and this unit is glued firmly to the designated rim using special adhesive. Tubed tyres offer enhanced safety in the event of a puncture and improved emergency-running characteristics

Only use tubed tyres on the designated rims. These do not have turned-up edges (rim flanges) and instead have a smooth inwards-curving surface onto which the tubed tyre is glued.

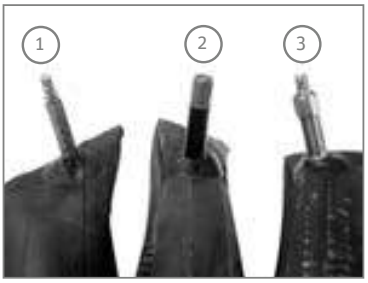
Only use the tubed tyres of the prescribed type and in the prescribed manner with the correct tyre pressure.

Special skills and a great deal of experience are required to glue on tubed tyres. Always have tubed tyres replaced at a professional bike workshop. Find out how to handle tubed tyres correctly and how to replace them safely.

17.4 Inner tubes

The inner tube is necessary to maintain the pressure inside the tyre. It is inflated via a valve.

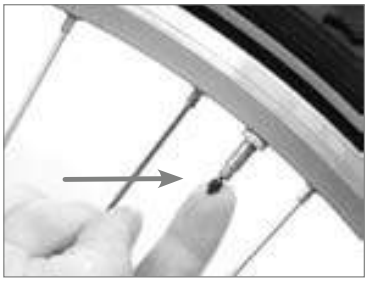
Three valve types exist:



1 Sclaverand or road valve
2 Schrader or car valve
3 Dunlop or Woods valve

All three have a cap to protect them from ingress of dirt.

To inflate an inner tube with a Sclaverand or road valve, proceed as follows:



› Unscrew the valve cap anticlockwise with your fingers.

› Unscrew the knurled nut anticlockwise.

› Push the knurled nut with your finger briefly into the valve until air escapes.

› Inflate the inner tube using a suitable tyre pump.

› Screw the knurled nut back down.

› Screw the cap clockwise back onto the valve.

Ask a specialist cycle shop for advice on which tyre pump is suitable for your valve.

To inflate an inner tube with a Dunlop/Woods valve or Schrader/car valve proceed as follows:

› Unscrew the valve cap anticlockwise.

› Inflate the inner tube using a suitable tyre pump.

› Screw the cap clockwise back onto the valve.

18 Repairing a puncture

To repair a puncture, you will need the following equipment:

- Plastic tyre lever
- Patches
- Rubber solution
- Sandpaper
- Spare inner tube, if required
- Spare valve, if required
- Open-ended spanner (if your bike is not equipped with a quick-release device)
- Tyre pump

We recommend you remove the defective wheel first. Open or remove the brake beforehand. The procedure for this depends on the type of bike brake that is installed.

Read the chapter on brakes before removing the brake as otherwise you could damage the brake system and this could lead to accidents.

18.1 Opening the brake

18.1.1 Opening the cantilever or V-brake

› Grip the wheel with one hand.

› Squeeze the brake pads or brake arms against the rim.

› Detach the brake cable at one of the brake arms.

18.1.2 Removing the hydraulic rim brake

› If quick-release brake mechanisms are fitted, remove a brake unit (see ➠ ***Chapter 9.2.2 "Operating the quick-release device"***).

› If no quick-release brake mechanisms are fitted, deflate the tyre.

18.1.3 Opening the side-pull calliper brake

› Open the quick-release lever on the brake arm or brake lever.

› If no quick-release brake mechanisms are fitted, deflate the tyre. The wheel can now be pulled out between the brake pads.

18.1.4 Releasing the hub gears, roller, drum or back-pedal brakes

› Undo the cable clamping screw or quick-release device on the brake arm.

› With back-pedal brakes, the screw connection of the brake arm on the chain stay must be released.

18.2 Removing the wheel

Please note that the work steps described here are for a specific example.
Please observe the information by the relevant manufacturer or consult your specialist cycle shop.

18.2.1 Removing the front wheel

› If quick-release devices are fitted to your bike, open them (see ➠ ***Chapter 9.2.2 "Operating the quick-release device"***).

› If axle nuts are fitted to your bike, release these by turning them anticlockwise using a suitable spanner.

› If the dropouts are specially formed to prevent the front wheel from falling out, continue loosening the nuts by turning them anticlockwise. Once the washers and nuts are clear of the dropouts, pull the front wheel out of the fork.

› If your bike is equipped with metal wheel locking devices, continue loosening the nuts by turning them anticlockwise.

› Pull the metal locking devices apart until they are clear of the dropout.

› Now pull the front wheel out of the fork.

18.2.2 Removing the rear wheel

› If your bike is equipped with derailleur gears, shift down to the smallest sprocket. The rear derailleur does not prevent the wheel from being removed in this position.

› If quick-release devices are fitted to your bike, open them (see ➠ ***Chapter 9.2.2 "Operating the quick-release device"***).

› If axle nuts are fitted to your bike, release these by turning them anticlockwise using a suitable spanner.

› Fold the rear derailleur backwards slightly.

› Lift the bike up slightly.

› Pull the wheel out of the frame.

› If the rear wheel still does not come out, open the quick-release device further by turning the lock nut anticlockwise.

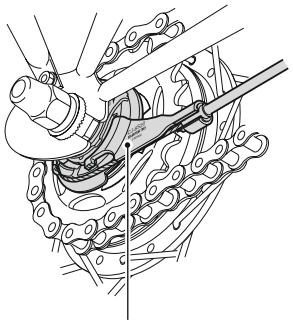
› Strike the wheel from above gently with the palm of your hand to shift it.

› The wheel should drop out.

The example here shows the removal of a Shimano hub gear:

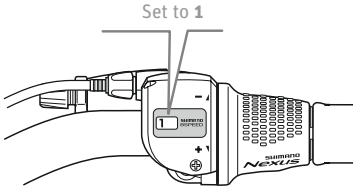
Disconnect the shifting cable to remove the rear wheel

› Disconnect the cable from the cassette joint to remove the rear wheel from the frame

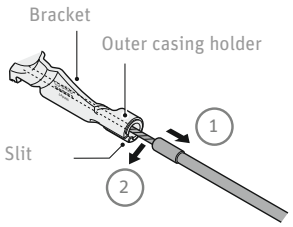


Cassette joint

› 1. Set the Revo-shift lever to 1.

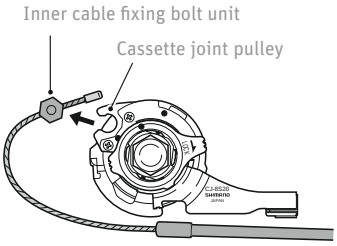


› 2. Pull the outer casing out from the outer casing holder of the cassette joint, and then remove the inner cable from the slit in the bracket.

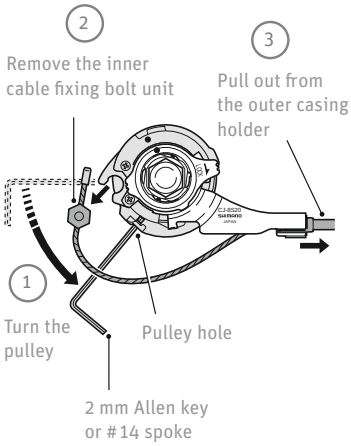


1 Pull out from outer casing holder
2 Remove from the slit

› 3. Remove the inner cable fixing bolt unit from the cassette joint pulley.



If it is difficult to pull the outer casing out from the outer casing holder of the cassette joint, insert a 2 mm Allen key or #14 spoke into the hole in the cassette joint pulley, and then turn the pulley to loosen the inner cable. Then remove the inner cable fixing bolt unit from the pulley first, and after this remove the outer casing from the outer casing holder.



› 4. Undo the screw of the brake arm and remove it.

› 5. Undo the wheel nuts and put them to one side. Remove the lock washers from the wheel axle.

› 6. Pull the rear wheel out of the dropout slits.

18.3 Removing the tyre and inner tube

› Unscrew the valve cap, fastening nut and the cap nut (if installed) from the valve. Remove the valve insert from Dunlop or Woods valves.

› Allow the remaining air to escape from the inner tube.

› Place the tyre lever on the inner edge of the tyre opposite the valve.

› Lever the tyre sidewall over the rim flange.

› Push the second tyre lever between the rim and tyre approx. 10 cm away from the first one.

› Continue levering the tyre off the rim until the tyre has detached round the entire circumference.

› Take the inner tube out of the tyre.

18.4 Mending the inner tube

› Pump up the inner tube.

› Put the inner tube in a container filled with water to locate the puncture.

› Push the inner tube below the surface of the water. Air bubbles will be visible at the point where the inner tube is torn or perforated.

› If you start losing air from the tyre on the road and cannot find the hole, simply inflate the inner tube hard. The hole will then get bigger as the air will escape with greater force and you will be able to hear more easily where it is coming from.

› Allow the inner tube to dry.

› Carefully roughen the inner tube in the area around the puncture using the sandpaper.

› Coat this area with rubber solution.

› Wait for several minutes until the rubber solution is touch dry.

› Press the rubber patch firmly onto the damaged area.

› Leave the rubber patch to dry for several minutes.

18.5 Fitting the tyre and inner tube

Make sure that foreign bodies do not enter the inside of the tyre. Make sure that the inner tube is crease-free and not pinched at all times. When fitting the tyre, bear in mind the running direction. If the tyre has a running direction, this will be indicated on the tyre sidewall.

- Make sure that the rim tape covers the spoke nipples and is undamaged.
- Put the rim with one edge inside the tyre.
- Push one side of the tyre completely into the rim.
- Insert the valve through the valve hole in the rim and fit the inner tube inside the tyre.
- Push the tyre over the rim sidewall.
- Pull the tyre forcefully into the centre of the rim. The area that has already been fitted will slip into the base of the rim.
- Check once again that the inner tube is seated correctly.
- Push the other side of the tyre completely over the rim flange using the heel of your hand.
- With Dunlop or Woods valves: Put the valve insert back into position and screw the cap nut tight.
- Inflate the inner tube slightly.
- Check that the tyre is correctly seated and is true using the indicator ring on the rim sidewall. Adjust the seating of the tyre by hand if it does not run straight.
- Inflate the inner tube up to the recommended tyre pressure.

18.6 Fitting the wheel

Please note that the work steps described here are for a specific example.
Please observe the information from the relevant manufacturer or consult your specialist cycle shop.

18.6.1 Inserting the front wheel

Bear the running direction of the tyre in mind when fitting the front wheel.

If your bike is equipped with a disc brake, make sure that the brake discs are correctly positioned between the brake pads.

18.6.2 Inserting the rear wheel

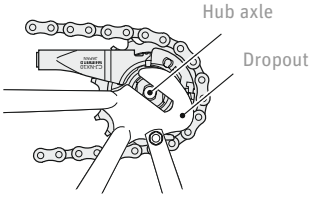
18.6.2.1 Bikes with derailleur gears

- If your bike is equipped with derailleur gears, put the chain back onto the smallest sprocket when fitting the rear wheel.
- Insert the wheel as far as it will go so it sits centrally in the dropouts.
- Tighten the hub nut, or firmly close the quick-release device (see ➠ ***Chapter 9.2.2 "Operating the quick-release device"***).

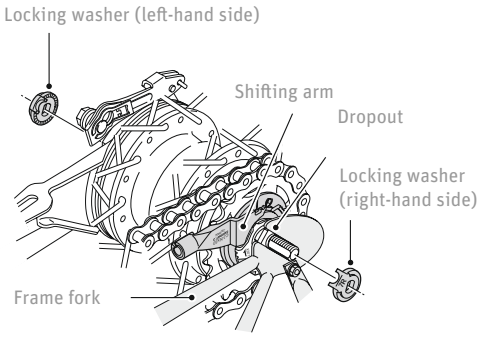
18.6.2.2 Bikes with hub gears

Fitting a wheel with gear hub in the frame

- 1. Fit the chain on the sprocket and offer up the hub axle to the dropouts.



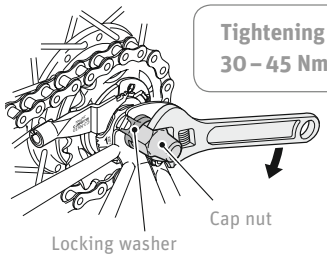
› 2. Fit the fixing washers onto both sides of the hub axle. Turn the shifting arm until the projections on the fixing washers engage with the slits in the dropouts. In this case the shifting arm can be mounted more or less parallel to the frame fork.



› The projecting part must be on the dropout side.

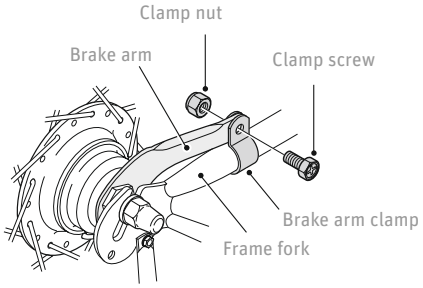
› Fit the fixing washers so the projections precisely engage in the slits in the dropouts on the front or rear of the hub axle.

› 3. Take up the slack in the chain and fasten the wheel onto the frame with the cap nuts.



Tightening torque
30 – 45 Nm

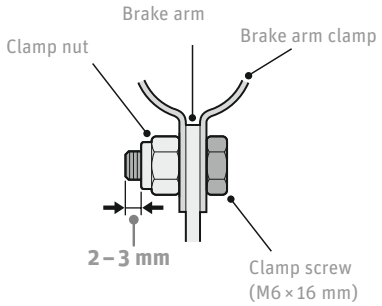
› 4. Fit the brake arm with brake arm clamp correctly onto the frame fork.



Counter the clamp nut with a 10 mm spanner when tightening the clamp screw for assembly of the brake arm clamp.

Tightening torque
2 – 3 Nm

Once you have installed the brake arm clamp, make sure the clamp screw projects roughly 2 to 3 mm beyond the clamp nut.



› 5. Before using the back-pedal brake, make sure the brake is working properly and the wheel turns easily.

Tighten all screws to the prescribed torque as otherwise screws could shear off and components could come loose or detach altogether (see ➠ ***Chapter 30.3 "Tightening torques for screw connections"***).

› Thread in the brake cable and secure it or close the quick-release brake mechanism.

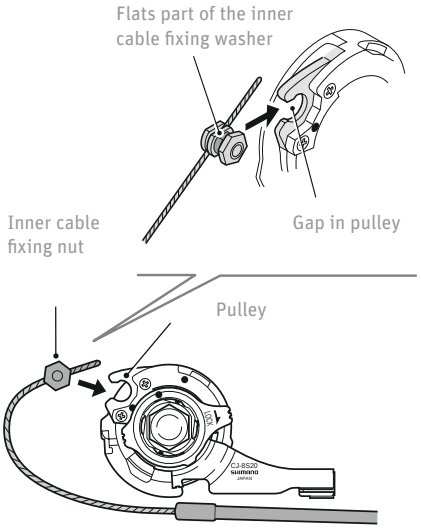
› Check that the brake pads make contact with the brake contact surfaces.

› Check that the brake arm is securely fastened.

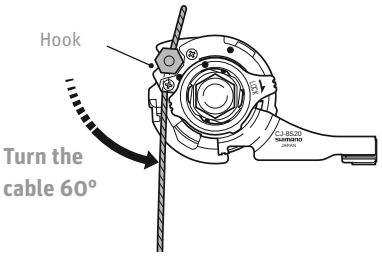
› Test the brakes.

Installing the shifting cable with hub gears

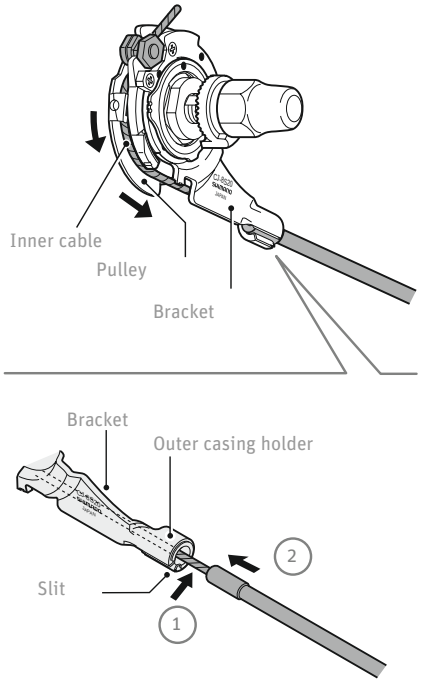
› Bring the cable around to the cassette joint pulley, hold so that the inner cable fixing nut is facing to the outside (toward the dropout), and then slide the flats part of the inner cable fixing washer into the gap in the pulley.



› Turn the cable 60° anticlockwise and attach it on the hook.

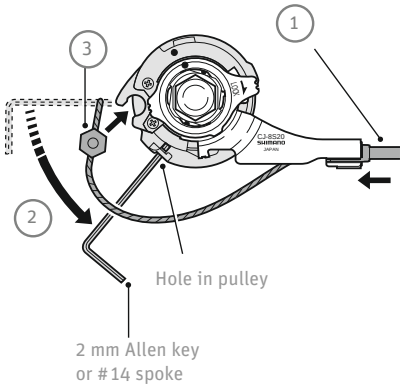


› Attach the inner cable to the pulley as shown in the illustration, pass the inner cable through the slit in the cassette joint bracket, and then insert the end of the outer casing securely into the outer casing holder.



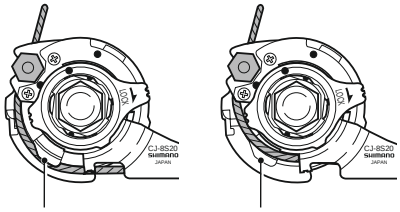
1 Pass through the slit
2 Insert into the outer casing holder

› If first inserting the outer casing into the outer casing holder is easier, then first insert the outer casing into the outer casing holder, and the insert a 2 mm Allen key or a #14 spoke into the hole in the cassette joint pulley, and then turn the pulley so that the inner cable fixing bolt unit fits into the gap in the pulley.



1 Insert into the outer casing holder
2 Turn the pulley
3 Insert the inner cable fixing bolt unit

Check that the inner cable is correctly seated inside the pulley guide.



Guide **OK**

Guide **not OK**

19 Bike gears

19.1 Derailleur gears

This User Manual describes the handling of typical, commercially available gear-shift components for MTB, ATB, cross and road bikes. Separate instructions are provided for other components on the CD or on the web pages of the relevant manufacturer in the Internet. If you have questions on installation, adjustment, maintenance and operation, please consult a specialist cycle shop.

If gear-shift components are loose, worn, damaged or adjusted incorrectly, this poses a risk of injury to the rider. Have the derailleur gears adjusted at a professional bike workshop.

- Always contact your specialist cycle shop if the chain jumps off the chainrings or sprockets when riding or
- you hear unusual noises or
- you cannot change gears easily or
- the rear derailleur, front derailleur or other gear-shift components are loose, damaged or distorted or
- chain links are defective or worn.

The bike chain must not be on the smallest chainring at the front and the small outer rear sprocket wheel simultaneously. The bike chain must not be on the largest chainring at the front and large inner sprocket wheel at the rear simultaneously. Otherwise the bike chain could jump off.

Never pedal backwards when changing gears as you could damage the gear-shift mechanism.

Only make changes to the gear-shift system carefully and in small increments. If settings are made incorrectly, the bike chain could jump off the sprocket wheel and cause you to fall off the bike. If you are unsure about what to do, have this work carried out by a professional bike workshop.

Even if the gear system is perfectly adjusted, it can produce noise if the chain is running at an extremely sharp angle. This does not mean it is defective and does not damage the drive. As soon as the chain is at a more shallow angle, the noise will disappear.

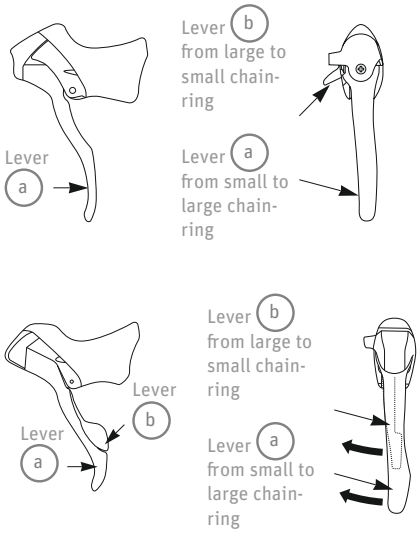
Never ride without a spoke protector. If a spoke protector is not installed, you must have one retrofitted. Otherwise the bike chain or rear derailleur could land in the gap between the sprocket and the spokes.

You should therefore select the lowest gear (largest sprocket wheel) via the gear-shift handle for the rear derailleur carefully as otherwise the rear derailleur could collide with the spokes and damage them.

19.1.1 Operating the shifting lever

19.1.1.1 Shifting lever on road bike

Shimano shifting lever

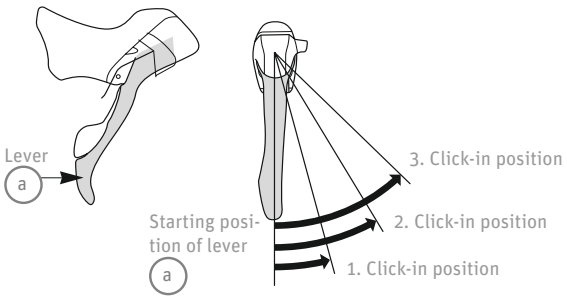

Lever b from large to small chain-ring
Lever a from small to large chain-ring
Lever a
Lever b from large to small chain-ring
Lever a from small to large chain-ring
Lever b
Lever a

Lever **a**: Shift to a larger chainring
Lever **b**: Shift to a smaller chainring

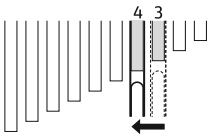
Once released, all levers revert to their initial position.

Operating the rear derailleur shifting lever

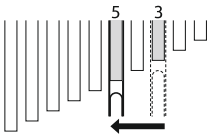
Lever **a**: Shift to a larger sprocket.
Lever **a** engages in positions 1, 2 and 3.



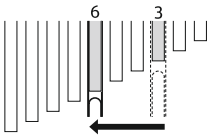
1. Shifting up one gear to next larger sprocket.
Example: shifting from 3rd to 4th gear



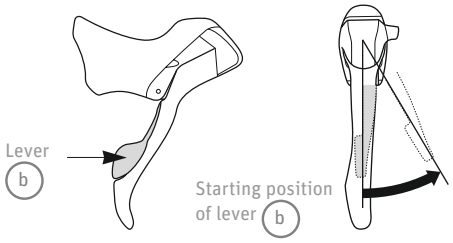
2. Shifting up two gears to a larger sprocket.
Example: shifting from 3rd to 5th gear



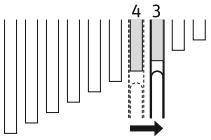
3. Shifting up three gears to a larger sprocket.
Example: shifting from 3rd to 6th gear



Lever **b**: Shift to a smaller sprocket. Press lever **b** once to change to the next sprocket down (smaller).



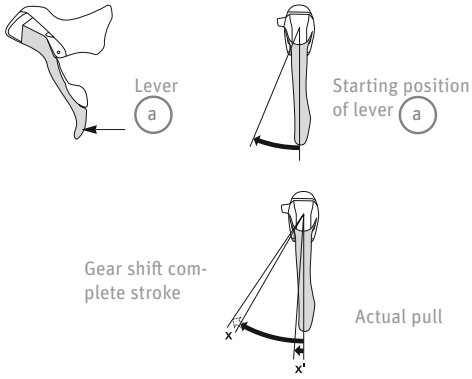
1. Shifting up one gear to next smaller sprocket.
Example: shifting from 4th to 3rd gear



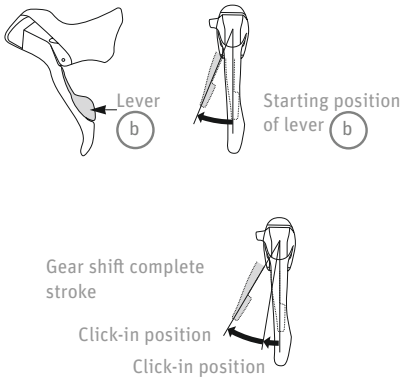
When lever **a** is pressed, lever **b** moves with it. However, you should avoid putting any pressure on lever **b** in doing so. The same applies for lever **a** when pressing lever **b**. The gear will not change if both levers are operated at the same time.

Operating the front derailleur lever (standard)

Lever **a**: Shift to a larger chainring



If the lever movement does not effect a full changeover of chainring, press the lever repeatedly by the amount (X') to move the lever the remaining distance (X) and change gears.



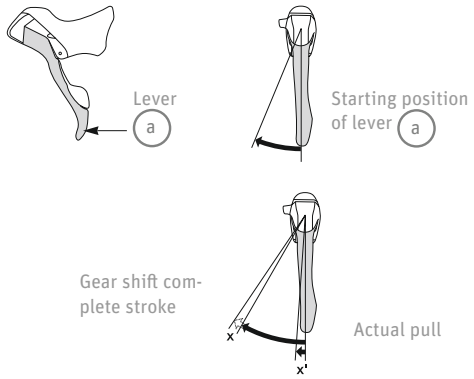
Lever **b**: Shift from intermediate chainring to smallest chainring

When lever **a** is pressed, lever **b** moves with it. However, you should avoid putting any pressure on lever **b** in doing so. The same applies for lever **a** when pressing lever **b**. The gear will not change if both levers are operated at the same time.

Operating the front derailleur lever with trimming (noise prevention), optional

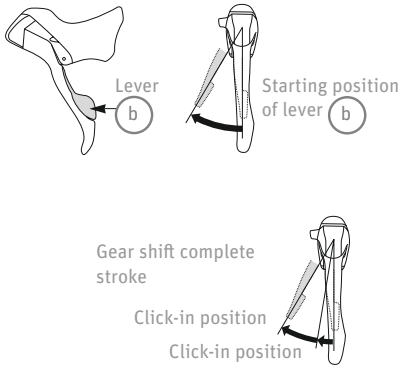
Gear shifting operations

Lever **a**: Shift to a larger chainring



If the lever movement does not effect a full changeover of chainring, press the lever repeatedly by the amount (X') to move the lever the remaining distance (X) and change gears.

Lever **b**: Shift from intermediate chainring to smallest chainring



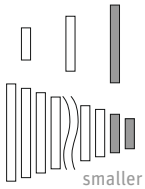
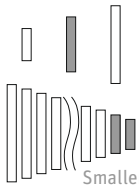
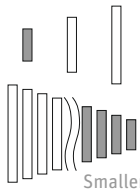
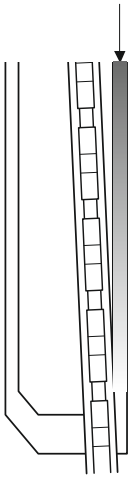
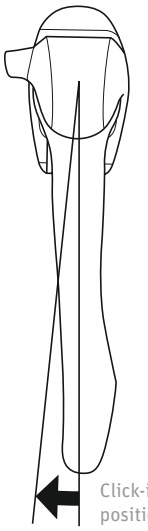
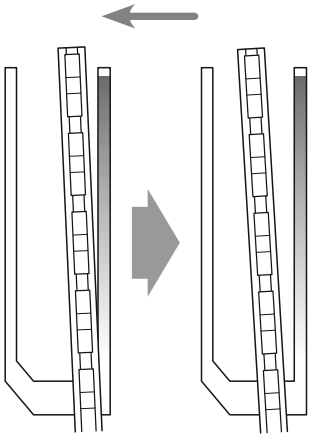
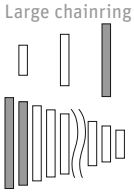
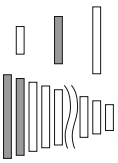
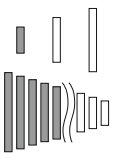
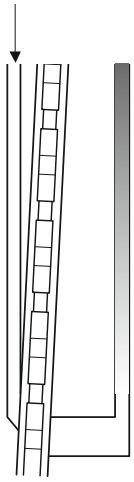
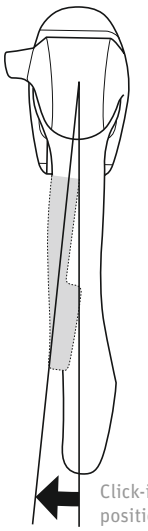
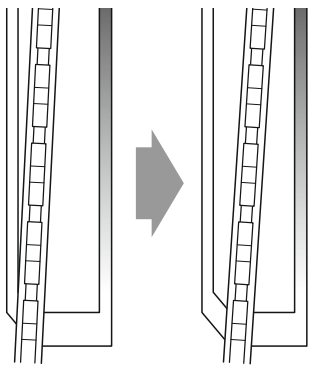
When lever **b** is operated, there is one click where trimming (the noise prevention mechanism) enagages, and a second stronger click when the gear shift stroke is completed. After trimming, the next push will complete the gear shift stroke.

Trimming (noise prevention)

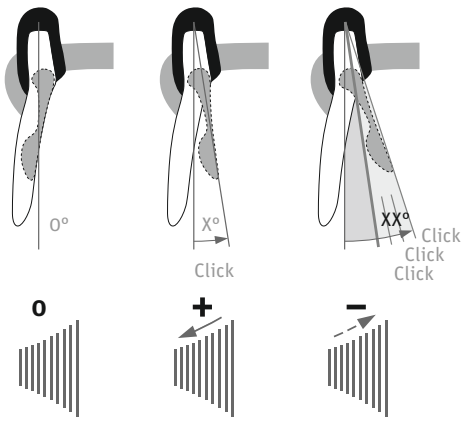
Depending on the position of the chain after shifting, it may rub against the outer chain guide plate or inner chain guide plate of the front derailleur and produce noise. In this case, lightly press lever **a** or lever **b** to move the front derailleur until it is no longer in contact with the chain.

This procedure is known as "trimming". Trimming is possible if the chain is on the large, intermediate or small chainring.

If you perform the trimming operation at one of the following positions, the noises will disappear completely.

CHAIN POSITION	INDICATION	TRIMMING	
		LEVER OPERATION	FRONT DERAILLEUR MOVEMENT
large chainring  smaller sprockets Middle chainring  Smaller sprockets Small chainring  Smaller sprockets	Chain in contact with outer chain guide plate Outer chain guide plate  Chain	Lever (a)  Click-in position (contact)	Trimming before trimming after trimming Front derailleur movement 
Large chainring  Larger sprockets Middle chainring  Larger sprockets Small chainring  Larger sprockets	Chain in contact with inner chain guide plate Inner chain guide plate  Chain	Lever (b)  Click-in position (contact)	Trimming before trimming after trimming Front derailleur movement 

SRAM shifting lever



Rear shifting lever: To shift to a tougher (higher) gear, press the small shifting lever gently inwards until you hear or feel a click. To shift to an easier (lower) gear, press the small shifting lever further inwards until you hear or feel a second click. You can shift down by up to three gears at once.

Front shifting lever: Press the small shifting lever inwards as far as it will go to shift from the small chain wheel to the large chain wheel. To shift from the large chain wheel down to the small chain wheel, press the small shifting lever in the centre until you hear or feel a distinctive click.

To prevent chain rubbing in extreme positions, the shifting lever at the front has a trimming function for the front derailleur. You can use this if the chain is on the large chain wheel.

To shift the front derailleur to the trim position, press the small shifting lever gently inwards until you hear or feel a gentle click.

Setting the swivel range

The range of the shifting and brake lever pivoting movement can be adjusted individually to suit the size of your hand.

› First, set the shifting lever range then adjust the brake lever until the brake lever limit stop makes contact with the shifting lever. This ensures that the brake lever cannot strike the shifting lever when it springs back.

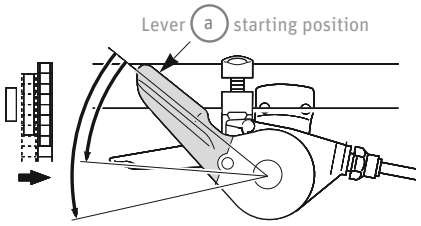
› To adjust the range of the shifting lever, push it inwards to reach the range adjustment screw. Push the adjustment screw inwards using a mandrel or your fingernail and turn it anticlockwise to move the shifting lever closer to the handlebars.

19.1.1.2 Shifting lever on MTB, trekking and touring bike

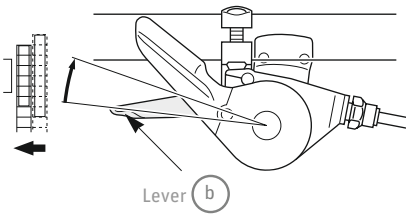
Standard shifting lever

Both levers **a** and **b** always revert to the initial position after they are pressed. The crank must always be turned when a lever is pressed.

Operating the front derailleur shifting lever

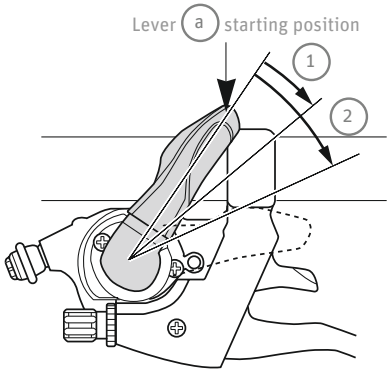


Shifting from a small to a large chainring
Press lever **a** once to move the chain from a small to a larger chainring.

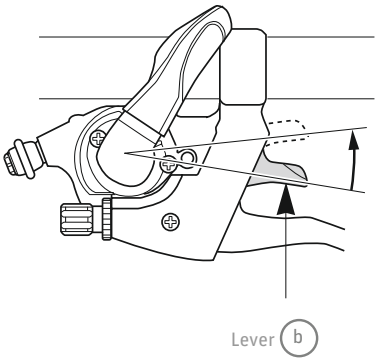


Shifting from a large to a smaller chainring
Press lever **b** once to move the chain from a large to a smaller chainring.

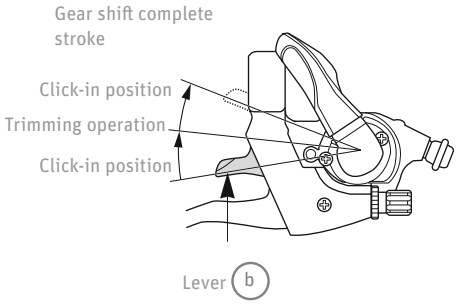
Operating the standard rear derailleur shifting lever



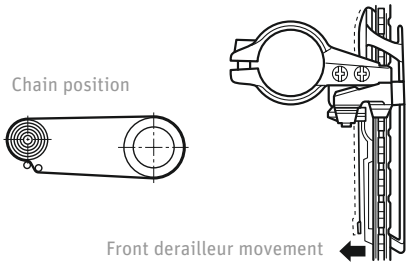
Shifting from a small to a larger sprocket
To shift by one gear only, push lever **a** to position **1**. To shift by two gears, push the shifting lever to position **2**. You can shift a maximum of 3 gears using this method.



Shifting from a large to a smaller sprocket
Push once to shift to a smaller sprocket.



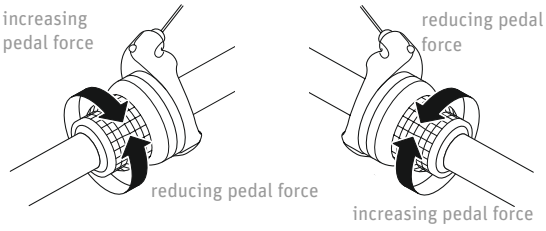
When lever **b** is operated, there is one click where trimming (the noise prevention mechanism) engages, and a second stronger click when the gear shift stroke is complete. The noise prevention mechanism no longer clicks once the trimming operation is complete which means that only the click-in positions will be heard when shifting between sprockets.



If the chain is on the large chainring and the large sprocket, the chain will rub the front derailleur producing a characteristic noise. When this happens, press lever **b** lightly to the point where it clicks, this causes the front derailleur to move slightly towards the smaller chainring, thereby eliminating the noise.

Twist-grip shifters

To shift up or down one gear only, turn the twist-grip shifter by one increment forwards or backwards.



If you wish to shift up or down several gears at once, continue turning the shifting lever by the required number of shift positions and in the required direction.

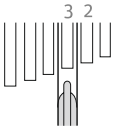
Rear derailleur

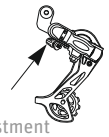
Have your specialist cycle shop carry out maintenance on the derailleur gears, or replace or adjust them.

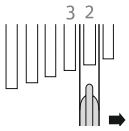
Precision adjustment / rear derailleur

Operate the shifting lever to shift the chain from the smallest sprocket to the second sprocket. Then take up the slack in the shifting cable with the shifting lever and turn the crank.

If the chain jumps to the third sprocket:



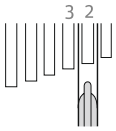


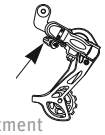


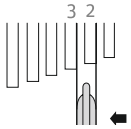
Adjustment screw

› Turn the adjustment screw clockwise until the chain moves back onto the second sprocket.

If noises cannot be heard:





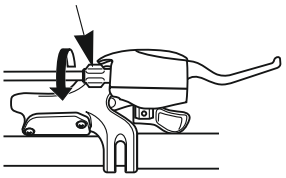


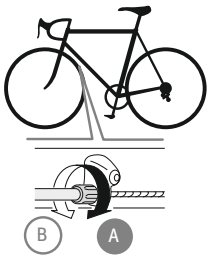
Adjustment screw

› Turn the screw anticlockwise until the chain rubs against the third sprocket.

The adjustment screw may also be on the shifting lever or on the frame.

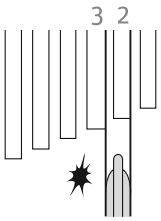
Adjustment screw





Cable housing adjustment screw

Optimum adjustment



Once the slack in the shifting cable has been taken up by the shifting lever, the chain should ideally rub the third sprocket and produce a noise.

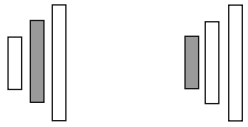
Release the shifting lever in second gear and turn the crank.

If the chain rubs the third sprocket, turn the adjustment screw clockwise slightly until the grinding noise stops.

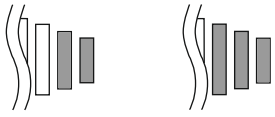
To ensure problem-free SIS operation, you will need to lubricate all power-transmitting parts.

If the chain is in the position shown, it could rub against the chainrings or the front derailleur and make a noise. If this is the case, you can shift the chain onto the second or next largest sprocket.

Chainrings



Sprockets



Cleaning

- Whenever possible, avoid using cleaning agents on the chain. If you use cleaning agents, such as rust remover, this may wash lubricant out of the chain which could lead to malfunctions.
- The chainrings and sprockets should be cleaned regularly using a neutral cleaning agent.
- You should clean the derailleur and lubricate the moving parts (mechanism and rollers) at regular intervals.

19.2 Hub gears

This User Manual describes the handling of typical, commercially available gear-shift components of a gear hub on a city or trekking bike. For other components, refer to the separate information or enclosed instructions.

If you have questions on installation, adjustment, maintenance and operation, please consult a specialist cycle shop.

If the hub is mounted on the frame, the correct fixing washers must be used on both sides and the hub nuts must be tightened to the prescribed torque (see ➠ ***Chapter 30 "Technical data"***).

If the fixing washers are used on one side only or the hub nuts are tightened incorrectly, the hub may malfunction: It could rotate. This could cause the shifting cable to pull the handlebar to one side and cause a serious accident.

The gears can be changed when the pedals are turning. Very occasionally, the hub may produce a harmless noise which is caused by its internal cogs and stop notches.

If you encounter resistance when turning the wheel, the brake pads will need to be replaced or the hub will need to be lubricated. This should be done by a professional bike workshop.

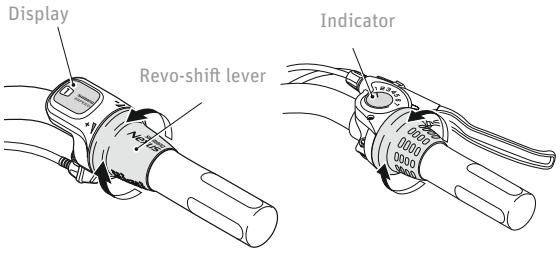
If the chain jumps off the the sprockets when you are riding, the slack in the chain must be taken up immediately. If there is no further scope for adjustment, the sprockets and chain must be replaced.

19.2.1 Operating the hub gears

19.2.1.1 Shimano 7/8-speed shift lever

- Turn the twist-shift lever to select all 8 (7) gears.

- Increasing pedal force (increasing resistance) ➞ indicator towards **8 (7)**



- Decreasing pedal force (decreasing resistance) ➞ indicator towards **1**

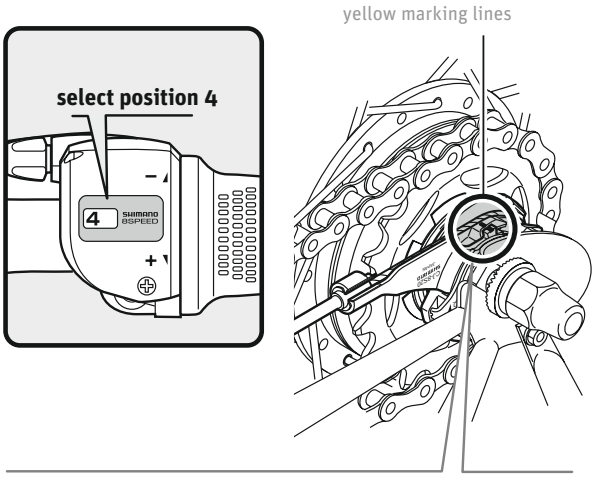
These instructions on operation of the Shimano twist-shift grips also apply for other makes of twist-shift grips.

19.2.2 Adjusting gears with Shimano hub gears

Example shown is a 7/8-speed hub.

› Select shift lever position **4**.

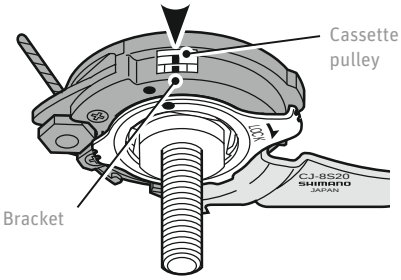
› Check whether the yellow marking lines on the bracket and cassette joint pulley line up.



Yellow marking lines appear at two points on the cassette joint. Use the line which is most clearly visible.

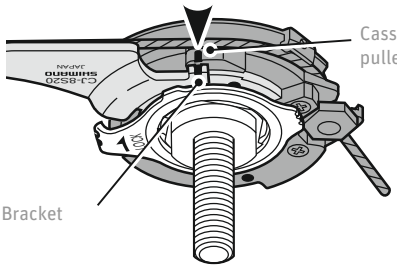
Bike in normal position

line up markings

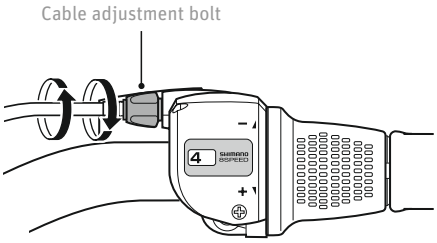


Bike in inverted position

line up markings



› Turn the cable adjustment bolt on the shift lever to align the marking lines. Next, set the Revo-shift lever from position **4** to position **1** then back to position **4**. Check that the yellow marking lines still line up.



20 Bike chain

There are two types of bike chain:

- A wide bike chain (½ × 1 / 8") for hub gears and
- A narrow bike chain for derailleur gears. These are available in different widths, depending on how may sprockets are on the cassette. Only use chains that are approved for precisely the number of sprocket wheels on your bike.

› Clean and lubricate your bike chain regularly.

› To prevent premature wear of the bike chain when using derailleur gears, select gears that keep the chain skew as marginal as possible.

To check the wear in the bike chain, proceed as follows:

› Take the section of the chain that rests on the front chainring between your thumb and forefinger.

› Pull the bike chain off the chainring. If the bike chain can be lifted by a significant amount, it is worn and must be replaced by a new one.

› With hub gears, the chain tension must be adjusted so that vertical play of one to two centimetres is present in the unsupported chain span between the chainring and sprocket wheel.

To take up the slack in the bike chain, proceed as follows:

› Loosen the rear wheel nuts.

› Pull the wheel back into the dropouts until only the permissible amount of play is present in the bike chain.

› Tighten all screw connections carefully clockwise.

Tighten all screws to the prescribed torque as otherwise screws could shear off and components could come loose or detach altogether (see ➠ ***Chapter 30 "Technical data"***).

20.1 Maintenance of bike chains

Bike chains are wear parts. Bike chains with hub gears wear out after roughly 3000 km, and after roughly 2000 km with derailleur gears.

If the bike chain is worn, it can break and cause a crash. If your bike chain is worn, have it replaced by your specialist cycle shop before using the bike again.

21 Brake, brake levers and brake systems

This User Manual describes the maintenance and handling of typical, commercially available brake components for MTB, ATB, cross and road bikes. For other components, refer to the separate information or enclosed instructions. If you have questions on installation, adjustment, maintenance and operation, please consult a specialist cycle shop.

21.1 Important information and precautionary measures

"Bicycles must be equipped with 2 brakes that operate independently of one another."
Paragraph 65 of the German Road Traffic Licensing Regulation (StVZO), similar rules apply in all other EU countries.

Have maintenance work on the brakes carried out by a professional bike workshop.

Do not allow fluids containing oils to come into contact with the brake pads, brake contact surfaces on the rim, brake blocks or brake disc as this could otherwise impair the effectiveness of the brake.

Brake blocks and brake pads are wear parts. Check the wear condition of these parts regularly. This can be identified by a marking. On the brake block, for example, the grooves will no longer be visible. Always replace both brake blocks at the same time.

Use genuine spare parts only as otherwise you could impair the functions of the bike or damage it.

To obtain correct friction pairing, only use brake pads that are suitable for the rim as otherwise the braking distance would be extended and wear increased. With carbon rims in particular, only brake pads that are expressly intended for this purpose should be used.

Rubber brake blocks and brake pads must not come into contact with oil or grease. If the rubber brake blocks and brake pads come into contact with oil or grease, this drastically reduces their braking performance and they must be replaced.

Tighten all screws to the prescribed torque as otherwise screws could shear off and components could come loose or detach altogether (see ➠ ***Chapter 30 "Technical data"***).

Brake cables are wear parts. You should check the wear condition of the brake cables regularly and replace these if necessary.

Check the brake cable for rust and fraying and replace the cable if it is faulty. If you do not, the brakes could malfunction.

There are different types of brakes, the type of brake depends on what it is used for:

- hub brakes,
- disc brakes and
- rim brakes.

The brakes can be operated mechanically or hydraulically.

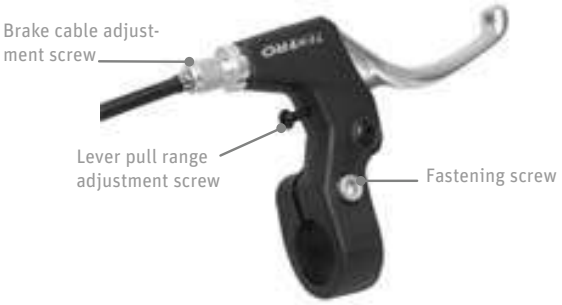
With hub gears, the brake lever that operates the front wheel brake is normally on the right-hand side, and with derailleur gears it is on the left. Remind yourself of the position of the brake lever before you ride off.

If you wish to attach the brake lever on the opposite side of the handlebar, follow the manufacturer's user manual or ask your specialist cycle shop to do this.

21.2 Brake lever

21.2.1 Standard brake lever

The bike is equipped as standard with a suitable brake lever. Check regularly that when you operate the brake lever it does not reach the handlebar and make contact with it. With the brake lever pulled, push the bike forward and check whether the braking performance is sufficient. If the bike rolls slightly forwards, you will need to have the brake cable readjusted or the brake pads replaced.



21.3 Hub brakes

Hub brakes are virtually maintenance-free as the brake block is inside the hub.

If applied continuously for an extended period, hub brakes become very hot. This reduces the braking performance and ultimately complete failure of the brake. You should adapt your handling accordingly.

21.3.1 Drum and roller brakes

With the roller brake or drum brake, the braking force is transmitted via a cable from the hand brake lever to the brake system. If applied continuously for an extended period, roller brakes or drum brakes become very hot. This reduces the braking performance and can result in complete failure of the brake. You should adapt your handling accordingly.

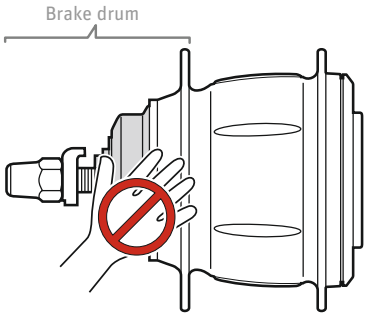
The brake lever of roller and drum brakes requires special tuning.

- Check regularly that the screws on the brake lever are tight.
- Turn them clockwise to retighten if necessary. For the correct tightening torque, refer to ➠ ***Chapter 30 "Technical data"***.
- Pull on the front wheel or rear wheel hand brake lever with the same amount of force as you would apply when braking sharply during a ride. Then push the bike forwards. The rear wheel should lock. The front wheel should decelerate so rapidly that the bike starts to tip forwards.
- Lubricate the cable-pull regularly.

Brake pads are wear parts. Have the brake pads for back-pedal, roller and drum brakes checked regularly, and replaced if necessary, by a professional bike workshop.

If you have not used your bike for a while, there may be surface rust in the brake drum which can increase the braking force. You should therefore brake gently several times when riding off to remove the surface rust. This prevents sudden blocking of the brake.

Avoid operating the back-pedal brake continuously on long descents as the internal components of the brake system can become extremely hot which reduces braking performance. On long steep descents, always alternate between the rear wheel brake and the second brake (front wheel brake) to allow the rear wheel brake to cool down. As the brake drum can become extremely hot when braking for prolonged periods, you should not touch it for at least 30 minutes after riding.



21.3.2 Back-pedal brake

With back-pedal brakes the braking force is transmitted by the foot via the chain to the brake system. If applied continuously for an extended period, back-pedal brakes become very hot. This reduces the braking performance and can result in complete failure of the brake. You should adapt your handling accordingly.

The back-pedal brake is operated by pedalling backwards. The force applied by the back-pedal brake varies depending on the position of your feet/pedals. If the crank arms are vertical, i.e. one of your feet is in the highest position and the other is in the lowest position, you cannot brake hard. Move the crank arms into a horizontal position if you think you may want/have to brake.

The back-pedal brake is easy to apply in a controlled manner. The maximum braking performance is only reached after a certain run-in period.

Operate the back-pedal brake carefully to familiarise yourself with it and get a feel for its retarding effect.

If you have not used your bike for a while, there may be surface rust in the brake drum which can increase the braking force. If you have not used your bike for some time, you should brake gently several times when riding off to remove the surface rust. This prevents sudden blocking of the brake.

If excessive overheating of the hub occurs, this can lead to loss of lubricant and a sharper braking effect. In these cases, have the brake checked by a professional bike workshop.

21.4 Rim brakes

V-brakes produce an extremely high braking force. You should therefore familiarise yourself with the V-brake and only apply the brake gradually. Practise emergency braking until you are sure you will be able to remain fully in control of your bike if you have to apply the brakes with force.

If additional suspension elements in the brake system (power modulators) are used improperly, this can lead to serious accidents. The required spring strength of the power modulator depends on the gross weight of the bike.

If the brake blocks are so worn that you can no longer see notches, have them replaced by a professional bike workshop.

21.4.1 Readjusting the brake

The brakes on your bike are set correctly at the factory or by your cycle dealer. The gap between the brake block and the rim is roughly 1 – 1.5 mm. However, as the brake blocks wear down the gap steadily increases and the brake lever must travel a greater distance to achieve the same braking effect. You should therefore inspect the brake at regular intervals and adjust it if the brake lever travel distance is too great or the brake is not working properly.

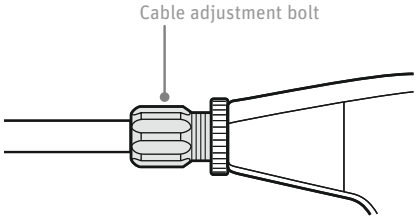
Check the brake as follows:

- Pull the front wheel and then the rear wheel hand brake lever with the same amount of force as you would apply when braking sharply during a ride. Then push the bike forwards.
- The rear wheel should lock and
- the front wheel should decelerate so rapidly that the bike starts to tip forwards.

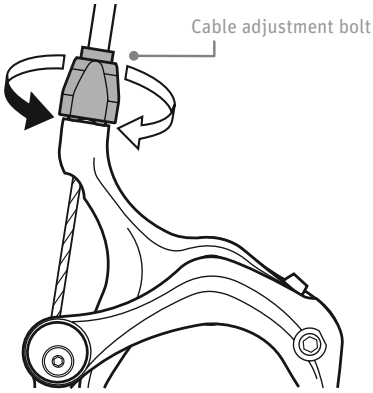
21.4.2 Adjusting the brake-pad clearance in relation to the rim

Turn the cable adjustment bolt to adjust the clearance between the brake pad and the rim. Turn the bolt inwards (clockwise) to increase the brake-pad clearance. Turn the bolt outwards (anticlockwise) to reduce the brake-pad clearance. The clearance between the brake blocks and rim should be roughly 1 mm.

Adjusting the cable-pull



With V-brakes



With side pull brakes

21.4.3 Wear of brake pad

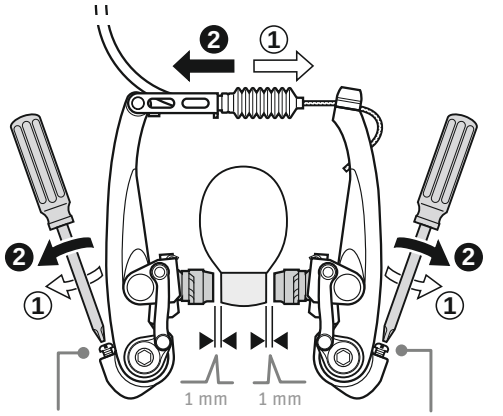
Most brake pads for rim brakes come with grooves or notches.

New brake pad

If these grooves are worn and can no longer be seen, this is normally a sign that the brake pad is worn.

Worn brake pad

Do not ride your bike if the brake pads are worn. Have them replaced by a professional bike workshop instead.



Spring adjustment screw

Spring adjustment screw

If required, you can readjust the rebound force via the spring adjustment screw so that both brake arms move symmetrically. Once you have done this, check that the brake is working properly (see ➠ ***Chapter 21.4.1 "Readjusting the brake"***).

If the brake is still not working properly, or the brake pad is so worn that it is not possible to readjust it, have your bike checked at a professional bike workshop and replace the brake block.

21.5 Disc brakes

Disc brake

With this brake type, the brake discs are on the hub and the brake calliper is on the frame or fork.

Have your disc brakes adjusted by a specialist cycle shop. If this is done incorrectly, an accident may occur.

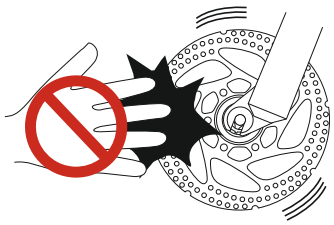
Once the brakes have been adjusted, always perform a brake test by pushing the bike quickly forwards and operating the brake lever. You should only use your bike if you can safely stop it using the brakes.

Disc brakes require a brake lead time during which the braking force increases. Bear this in mind throughout the entire brake lead time. The same effect also occurs after replacing the brake block or disc.

If you hear unusual noises when braking, the brake blocks may have reached their wear limit. Allow the brakes to cool down then check the brake block depth. Have the brake blocks replaced if necessary.

When installing, removing and carrying out maintenance on the wheel, do not touch the brake disc with your fingers when it is turning. You could be seriously injured if you catch your fingers in the cutouts of the brake disc.

The brake calliper and the disc can become extremely hot when braking. You should therefore not touch these parts when riding the bike or immediately after dismounting as you could burn yourself. Before adjusting the brakes, check that the parts have cooled down sufficiently.



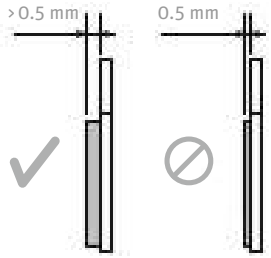
You must only fit a disc brake on your bike providing suitable mounting devices are installed on the frame and the bike fork. If in doubt, consult a specialist cycle shop.

If the brake blocks come into contact with oil or grease, they must be replaced. If the brake disc comes into contact with oil or grease, it must be cleaned as otherwise its braking performance will be drastically reduced.

Check whether the quick-release lever for the wheel is on the side opposite the brake disc. If the quick-release lever is on the same side as the brake disc, there is a danger you could burn yourself when operating the lever. The heat in the brake disc could also reduce the clamping force of the quick-release device.

If the brake disc is worn, cracked or bent it must be replaced. Have this work carried out by a professional bike workshop.

If the depth of the brake blocks is less than 0.5 mm, they must be replaced.



21.5.1 Hydraulic disc brake

The hand brake lever of the hydraulic disc brake is equipped with a master cylinder. The hydraulic fluid is fed through a tube to the brake cylinders. This actuates the brake pistons which push the brake blocks against the brake disc. This type of brake requires little maintenance and can be very powerful.

Once the brakes have been adjusted, always perform a brake test by pushing the bike quickly forwards and operating the brake lever. You should only use your bike if you can safely stop it using the brakes.

Check regularly, also before each journey, that the lines and connections are tight. If lines and connections are not tight, brake fluid may escape from the brake system. The brake may not work properly as a result.

If fluid escapes from the braking system, do not use the bike and have the necessary repair work carried out immediately by a professional bike workshop.

If you continue riding the bike in this condition, the risk of brake failure is extremely likely.

If the brake blocks come into contact with oil or grease, they must be replaced. If the brake disc comes into contact with oil or grease, it must be cleaned as otherwise its braking performance will be drastically reduced.

21.5.2 Vapour bubble formation

› Vapour bubble formation can occur if the brakes are operated continuously for some time, e. g. during a long steep descent.
Instead of applying gentle pressure continuously with the brakes, operate them for shorter periods, with more force if necessary, releasing the brake lever intermittently.

› Vapour bubbles form if water in the brake fluid heats up, evaporates and forms bubbles in the brake system.

As these are easily compressed, the brake lever travel distance increases.

When transporting or storing the bike upside down, air bubbles can form in the brake system fluid reservoir.

If you then use the bike, the brakes could fail and cause a serious accident.

Once the bike is in the correct riding position, pull the brake lever several times to check whether the brakes respond normally.

If not, adjust them as follows:

› Adjust the brake lever so it is parallel to the ground and operate it slowly several times so the bubbles return to the reservoir.

› If the response is still poor, the brake system must be vented. Have this work carried out by a specialist cycle shop.

Brake pads and brake blocks are wear parts. Have the brake pads of hydraulic disc brakes checked regularly, and replaced if necessary, by a professional bike workshop.

21.5.3 Cleaning the brake system

If the brake blocks come into contact with oil or grease, they must be replaced. If the brake disc comes into contact with oil or grease, it must be cleaned as otherwise its braking performance will be drastically reduced.

› Clean and maintain the brake system using isopropyl alcohol, soapy water or a dry cloth. Do not use commercially available brake cleaning agents or agents to prevent braking noises as these can damage components such as the seals.

21.5.4 Fitting/removing the wheel

› When removing the wheel, we recommend you use a brake block spacer. This prevents the piston from being pushed out if the brake lever is operated once the wheel has been removed. This also prevents air bubbles in the expansion vessel from entering the system.

› If the brake lever is operated and the brake block spacer is not inserted, the pistons may extend further than normal. Put the bike in an upright position to push back the brake blocks. Use a clean, flat screw driver or tyre lever and be careful not to scratch the brake blocks. If the brake blocks are not fitted, push the piston back carefully without damaging it. If you have trouble pushing back the brake blocks or piston, remove the reservoir cap and try again. Note that some oil may flow out the reservoir.

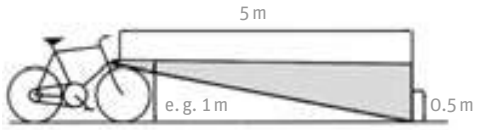
› After fitting the wheel, check that the quick-release lever is on the side opposite the brake disc. If it is on the same side as the brake disc, there is a danger of the lever and brake disc obstructing one another and this could also reduce the clamping force of the quick-release device.

22 Lighting system

In some EU countries, only lighting systems that are prescribed by national legislation (the Road Traffic Licensing Regulations (StVZO) in Germany for example) and have been approved for use may be installed on bikes. If in doubt, ask your specialist cycle shop.

22.1 Specifications for lighting system

- At a distance of five metres, the cone of light thrown by the front light must be at half the height of its exit point. The centre of the cone of light determines its height.



Aligning the front light

- The cone of light thrown by the front light must only light the road for ten metres at the most. The centre of the cone of light determines its distance.

22.2 Special regulations for road bikes

- You can fit battery-operated front lights and rear lights to sports bikes with a maximum weight of 11 kg (road bike). Please familiarise yourself with the applicable regulations and, if applicable, have the bike refitted.
- Always carry these with you.
- Dynamo-operated lighting systems must be used with bikes that weight more than 11 kg. The lighting system must come with an official test mark. Please familiarise yourself with the applicable regulations and, if applicable, have the bike refitted.

22.3 Generator / dynamo

The dynamo produces the energy required to operate the front and rear lights. There are different types of dynamos.

22.3.1 Sidewall dynamo

Sidewall dynamo

The dynamo must be positioned so its longitudinal axis is perpendicular to the wheel axle. The roller must be in contact with the designated traction surface on the tyre across its entire width.

Only switch the dynamo on and off when the bike is stationary as otherwise you could put yourself and other road users in danger. The sidewall dynamo is less effective in wet conditions. Provide additional lighting if necessary.

22.3.1.1 Switching the sidewall dynamo on and off

› Switch the dynamo on/off via the pushbutton or the lever. The traction roller is now on the tyre sidewall.

› To switch the dynamo off, pull it away from the tyre and guide it into its starting position. The dynamo engages in the starting position.

22.3.2 Hub dynamo

The hub dynamo is inside the hub of the front wheel. The hub dynamo is highly efficient, and the wear is extremely low.

Hub dynamo

There is a switch or a sensor on the back of the front light on some bikes with a hub dynamo. The sensor switches the light on automatically in the twilight or when passing through a tunnel. Other models have a switch on the handlebar that switches the lighting on and off.

If you want to remove the front wheel, you first need to remove the connecting terminal for the light cable.

When you put the front wheel back on, turn it so that the connecting terminal for the light cable is on the right-hand side (facing in the direction of travel). If the connecting terminal is on the left, the dynamo will not be able to turn properly or the lighting system may stop working. Ensure correct polarity of the connections.

22.4 Failure of the lighting system

If the lighting system fails or develops a fault when riding in the dark this could cause a serious accident. Have the fault repaired at a professional bike workshop before you continue your journey.

Extremely powerful (rechargeable) battery-operated bicycle and outdoor lights are available from some retail outlets. With some exceptions, use of these lights on public roads is not permitted.

23 Add-on components

23.1 Pannier rack

The pannier racks on the bike satisfy the standard EN 14873.

The load-carrying capacity of the pannier rack falls into one of four possible categories: 5 kg, 10 kg, 18 kg and 25 kg.

The information on load-carrying capacity is embossed on the pannier rack.

The maximum load it can handle may be higher, depending on its design. This is stated separately.

If you carry luggage, this changes the ride characteristics of your bike. It increases the braking distance for one thing. This can lead to serious accidents. Adapt your handling to the different ride characteristics. Apply the brakes in good time and bear in mind that the bike's steering response will be more sluggish.

Only carry luggage on the pannier rack provided for this purpose. Do not attach carriers to the seatpost. It is not designed for this purpose. Overloading by a carrier can lead to component breakages and serious accidents.

If you carry luggage on your bike, it is extremely important that you do not exceed the maximum permissible loading (see ➠ ***Chapter 30 "Technical data"***).

If you fit another carrier, it must comply with standard EN 14873.

The maximum permissible load must be stated on the carrier (see ➠ ***Chapter 30 "Technical data"***).

23.1.1 Front pannier rack

Front pannier rack

Front pannier racks are attached to the front axle or the front fork. They are designed to carry smaller loads than rear pannier racks. If you carry luggage on this pannier rack, you must familiarise yourself with the changed steering response.

Only use suitable pannier bags.
Consult a specialised dealer.

23.1.2 Rear pannier rack

Rear pannier rack

This type of luggage carrier attaches to the rear triangle of the bike.

If you attach a rear pannier rack to a full-suspension frame, the proportion of unsprung weight increases which changes the suspension behaviour. You will therefore have to readjust your suspension / damping accordingly.

If you carry pannier bags or other loads on the pannier racks, make sure they are securely attached. Make sure that nothing can become caught in the spokes and the turning wheels.

Only fit child seats to rear pannier racks if suitable fixtures are provided. In doing so, be careful not to exceed the permissible weight category.

23.2 Wheel guards / mudguards

Additional struts are mounted to hold the mudguards in the correct position. The strut is at its ideal length if the inner edge of the wheel guard runs more or less concentrically and parallel to the tyre.

The wheel guard cannot detach when you are riding normally. If a foreign object lodges between the front wheel guard and the tyre and blocks it, the mudguard struts immediately detach from their mountings on the fork. This allows the mudguard to deflect and the wheel will not block.

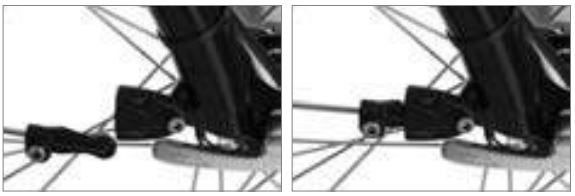
If this happens, the struts must be securely reattached. Have a specialist cycle shop check that the mudguard, struts and plastic mounts are still in a serviceable condition.

Never ride with the strut detached, it must be reattached. If this is not possible, have the strut replaced by a professional bike workshop.

Check regularly that the struts are securely fastened in the safety-release mechanisms.

If you notice that a wheel guard is damaged, always replace it before using the bike again.

23.2.1 Re-engaging the safety-release mechanism



Safety mechanism released *Safety mechanism engaged*

A plastic clip is attached to the end of the strut.

- Insert this clip on the strut into the easy-clip mount on the fork until it engages.
- Align the wheel guard so that the tyre and front wheel guard do not touch.

To securely reattach the safety-release mechanism, you may need to push the strut and plastic mount slightly together by pressing hard.

24 Accessories and equipment

Always install enclosed accessories according to the instructions. Use the correct tightening torques for screw connections (see ➠ ***Chapter 30 "Technical data"***).

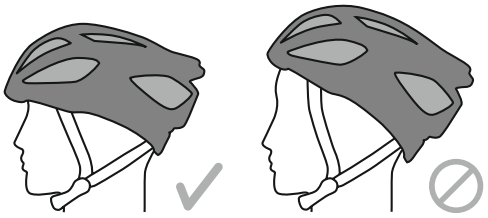
- Only use accessory parts that meet the requirements of the national road traffic licensing regulations (these are the Road Traffic Licensing Regulations (StVZO) in Germany for example).
- Non-approved accessory parts are not safe for use in traffic and can cause accidents. All accessories or add-on components must be compatible with your bike
- Otherwise accidents could occur or the bike could be damaged. Ask your specialist cycle shop for advice.

24.1 Child seat

You can carry a child up to the age of seven years on the child seat. The rider must be at least 16 years old in Germany.

A child seat must not be mounted on a carbon frame as this could damage the frame.

- Only use child seats that satisfy the standard EN 14344.
- These child seats must safely support the child's feet.
- Never leave your child sitting unattended in the child seat when you park your bike. The bike could fall over and severely injure the child.
- Never attach the child seat to the bike handlebars directly as it will not be possible to steer the bike safely.
- Do not use a suspension saddle if you are carrying a child in a child seat behind the saddle. The child's fingers could be crushed. The coil springs under the seat must always be completely wrapped or covered in such a way that it is impossible to insert fingers into the coils of the springs.
- Always strap the child into the child seat as otherwise it could fall out and be severely injured.
- Make sure that children wear a snug fitting bicycle helmet as otherwise a severe head injury may result in the event of a crash.



When using a child seat, this adversely affects the handling of the bike. The additional weight can cause the bike to sway and significantly increases the braking distance. Adapt your handling accordingly.

Not all bikes equipped with a suspension system are suitable for transporting child seats

Check the mounting options or consult your specialist cycle shop. If the child seat is mounted incorrectly, a serious accident may occur.

Do not exceed the maximum permissible gross weight of the bike and the maximum load-carrying capacity of the pannier rack (see ➠ ***Chapter 30 "Technical data"***). If you do, this could damage the pannier rack and frame and cause a serious accident.

24.2 Bike stand

- Never leave your child sitting unattended in the child seat when you park your bike. The bike could fall over and severely injure the child.
- Never ride with the stand folded out.

24.3 Bike trailer

Not all bikes are suitable for trailers. Ask your specialist cycle shop if your bike is designed and suitable for this.

- Only use trailers that meet the requirements of the road traffic licensing regulations in your country (the Road Traffic Licensing Regulations (StVZO) in Germany for example). Non-approved trailers can cause accidents.
- Trailers adversely affect the handling. Adapt your handling accordingly as otherwise the bike trailer may tip up or detach and cause an accident.
- Practise starting off, braking, cornering and riding on hills with an unladen trailer.
- Bear in mind that the gross weight of the bike also includes the trailer.
- A bike trailer may increase the braking distance considerably. Failure to observe these points could result in an accident.

24.4 Bike basket

The fixing for the basket must not damage the handlebar or handlebar stem.

- Attach the basket so as not to cover the front light and front reflector.
- In doing so, be careful not to bend the brake and shifting cables.
- Do not carry more than five kilogrammes of luggage in the basket.
- Bear in mind that the steering characteristics change when you use a basket.

24.5 Bar ends

Always attach bar ends securely to the handlebars as otherwise you could have an accident.

If a thin-walled handlebar is fitted to your bike, you may require additional accessory parts to protect the handlebar from damage. Read the manufacturer's instructions for use carefully.

If a carbon handlebar is fitted to your bike, find out from your specialist cycle shop whether this handlebar is approved for use with bar ends.

25 Bike carriers for mounting on roof and rear of car

- Only use roof and rear-mounted bike carriers that meet the requirements of the road traffic licensing regulations in your country (the Road Traffic Licensing Regulations (StVZO) in Germany for example). Non-approved roof and rear-mounted bike carriers are not safe for use in traffic and can cause accidents.
- Adjust your driving to take the load on your car roof into account. Bear in mind that your car's overall height has changed.

The bike could come off the carrier and cause a serious accident. When transporting the bike, check regularly that it is still securely fastened.

Loose parts such as tools, luggage and tool kits, child seats, tyre pump, etc. could detach in transit and endanger other road users. Remove all loose parts from the bike before setting off.

- Avoid transporting the bike upside down. Only attach the bike by the handlebar, handlebar stem, bike saddle or seatpost if so intended by the manufacturer of the carrier. Do not use mountings that could damage the bike fork or frame.
- Do not attach your bike to the roof or rear-mounted carrier by its pedal cranks. Always attach bikes by their wheels when transporting them, unless the carrier is designed for something else, as otherwise the frame and fork of the bike could be damaged.

You can also find important information on using and fitting add-on components and accessories in the Internet on the pages of the relevant manufacturer. ➠ *Chapter 29* contains a link list.

26 Carbon components

Carbon is a specific material that requires special handling and care when setting up and carrying out maintenance on the bike as well as when riding and also during transportation and storage.

26.1 Properties

Carbon parts must not be deformed, dented or bent following an accident or crash. It is possible that fibres have been destroyed or have detached although this is not evident externally.

You should therefore inspect the carbon frame and all other carbon components very carefully if you come off the bike or if it falls over. If you are not absolutely sure that the bike is still in a sound condition, have the carbon components in question checked by an expert.

26.2 Torques

Some carbon components require lower tightening torques than metal components. If the tightening torques are too high, this can lead to hidden damage that may not be visible externally. Frames or other components can break or change to the extent that they could fall off. You should therefore always observe the information enclosed by the manufacturer with the component(s) or ask a specialist dealer for advice. Use a torque wrench to ensure the right tightness is maintained.

If your bike has a carbon frame and a bottom bracket housing for a BB30 bottom bracket please note the following:

In this case you can fit an adapter so that a bottom bracket with conventional BSA thread can be used. However, bear in mind

- You can only install the adapter if the frame is completely undamaged. Repairing a defective BB30 housing serves no purpose. If it is not installed correctly, the bottom bracket housing may be damaged which would render the war-

ranty void. This kind of adapter should only be fitted by a specialist cycle shop.

- Once the adapter has been fitted in the carbon frame it cannot be removed.

26.3 Visual inspection

If your carbon component has pre-existing damage, it could suddenly fail completely with potentially disastrous consequences. You should therefore inspect your carbon frame and components thoroughly on a regular basis.

› Look for splitting, deep scratches, holes or other changes in the carbon surface.

› Check whether the components feel softer or have more give in them than usual.

› Check whether individual layers (paint, finish or fibres) are flaking off.

If you suspect a component is no longer sound, you should definitely replace it before riding your bike again. You should ideally hand over your bike to a specialist dealer for inspection.

Inspect the following components and areas regularly (at least every 100 km) for cracks, fractures or changes in surface appearance. Furthermore, if you come off the bike or if it falls over, these components must always subsequently be inspected:

26.4 Carbon frame

Front derailleur clamp area, derailleur hanger, saddle clamp, headset spacers, bottom bracket spacers, brake boss or disc brake mount, dropout slots, suspension mounts on main frame and rear triangle, bearing mounts with full-suspension frame, transition areas around threaded bushes for drinking bottles

Mounting of a child seat to a carbon frame is not permitted. There is a danger of the frame breaking with serious consequences.

26.5 Carbon handlebar

Transition area at handlebar stem, handles, clamping areas of other components

If your bike falls on its handlebar, the best thing you can do is replace it. Always have bar ends retrofitted by your specialist cycle shop.

26.6 Carbon handlebar stem

Clamping area of all screws, head tube inside and outside

If you have changed the handlebar position, bear in mind that the stem must extensively enclose the head tube.

26.7 Carbon wheels

Surface wear, change of surface, e. g. due to heat produced when braking, abrasion of brake blocks, wheel hub or their flanks

If you are using a bike with carbon rims, bear in mind that the braking behaviour of this material is much poorer than aluminium rims.

Note that only approved brake blocks may be used.

26.8 Carbon fork

Fork blades on fork head, dropouts and clamping area of quick-release device, fork head below fork cone, clamping area of A-head stem on inside and outside

If you have changed the handlebar position, bear in mind that the stem must extensively enclose the carbon section.

26.9 Carbon seatpost

Transition area between seatpost and seat tube, transition area at head of seatpost, contact area of all screws

If other carbon parts are installed on your bike, inspect them regularly for cracks, fractures or changes in surface appearance.

Retapping of the thread and bearing shells and reaming of the seat tube is not permitted.

As a basic rule, if a fixture is not already provided on a carbon frame or component for an object (e.g. threaded inserts for bottle cage), it must not be fitted. The attachment of pannier racks, trailers and other fixtures are not permitted due to the risk of breakage.

26.10 Splinters

Carbon fibres are extremely thin and hard. You should therefore handle damaged carbon parts very carefully. Individual fibres may detach and stick out. If these projecting fibres come into contact with your skin, there is a danger of them splintering off and causing an injury.

26.11 Fastening in mounting stand

Only clamp your carbon frame at the seatpost when fastening your carbon frame in a mounting stand, as otherwise the clamping mechanism may cause visible or concealed damage to the frame. If your bike has a carbon seatpost, we recommend you replace it provisionally with an aluminium or steel seatpost when carrying out this work.

26.12 Transportation by car

When transporting the bike on the roof rack or on a towbar cycle carrier, never attach it by its frame. Always attach the bike at the seatpost, and never at the down tube, top tube, seat tube, fork blades, steering tube, chain stay, cranks or seat stay.

The clamping mechanism could cause visible or concealed damage to the frame that may affect your safety. If your bike has a carbon seatpost, we recommend you replace it provisionally with an aluminium or steel seatpost when transporting it.

27 Care and maintenance of the bike

27.1 Care

Do not allow care products or oils to come into contact with brake pads, brake discs and the rim's brake contact surfaces. This could reduce the effectiveness of the brake.

Do not use a powerful water jet or high-pressure cleaner. If water under under high pressure is directed at the bike, it can enter the bearings. This can dilute the lubricant which increases friction. This leads to rusting and irrepairable damage to the bearings.

Do not clean your bike with

- acids,
- grease,
- hot oil,
- brake cleaners (apart from brake discs) or
- fluids containing solvents.

These substances attack the surface of the bike and accelerate wear.

Dispose of used lubricants, cleaning agents and care products in an environmentally sound manner. Do not pour these substances into the domestic waste, down the drain or into natural water bodies or the soil.

How well the bike works and how long it lasts depends on how well you look after it.

› Clean your bike regularly using hot water, a small amount of cleaning agent and a sponge.

› You should also always take this opportunity to check your bike for cracks, dents or material deformation.

› Have defective parts replaced before you ride the bike again.

› Touch up damaged paintwork.

Treat all parts that are susceptible to corrosion more frequently than other parts with preservatives and care products, especially during the winter and in aggressive environments such as coastal regions as otherwise your bike will corrode (rust) more powerfully and quickly.

› Clean all galvanised and chrome-plated parts as well as stainless-steel components regularly.

› Preserve these parts after cleaning with spray wax. Make sure that wax does not come into contact with brake discs and rims.

› If you stop using your bike for a while, in the winter for example, store it in a dry place at a constant temperature.

› Before putting your bike into storage, inflate both tyres to the prescribed tyre pressure.

To find out more important information on looking after your bike, visit the Internet pages of the relevant component manufacturer. The link list in ➠ *Chapter 29* provides an overview with links.

27.2 Wear parts

Your bike is a technical product that must be regularly checked.

Many parts on your bike are subject to a higher degree of wear due to their function and depending on their use.

Have your bike checked regularly at a professional bike workshop and have the wear parts replaced.

27.3 Tyres

Due to their function, bike tyres are subject to wear. This depends on how the bike is used and the rider can influence this significantly.

- Do not brake so sharply that the wheels lock.
- Check the tyre pressure regularly. The maximum permissible tyre pressure, and normally also the minimum permissible pressure, can be found on the tyre wall.
- If necessary, inflate the tyre up to the specified value. This reduces wear.
- Do not expose the tyres to things that can damage them such as sunlight, petrol, oil, etc.

27.4 Rims in conjunction with rim brakes

Owing to the interaction of the rim brake with the rim, not only the brake pad but also the rim is subject to function-related wear. If fine cracks appear or the rim flanges deform when the tyre pressure increases, this indicates increased wear. Wear indicators on the rim allow its wear condition to be easily identified.

- Check the wear condition of the rim at regular intervals (see ➠ ***Chapter 16.3 "Checking the rims"***).

27.5 Brake pads

The brake pads on rim, roller, drum and disc brakes are subject to wear, the extent of which depends on how the bike is used. If the bike is ridden in hilly regions, or used in a sporty manner, the brake pads may need to be replaced more often. Check the wear condition of the pads regularly and, if necessary, have them replaced by a professional bike workshop.

27.6 Brake discs

Brake discs also wear out as a result of intensive braking, or during the course of time. Find out from the manufacturer of your brakes or your specialist cycle shop about the respective wear limits. You can have worn brake discs replaced at a professional bike workshop.

27.7 Bike chains or toothed belts

The bike chain is subject to function-related wear the extent of which depends on care/maintenance and how the bike is used (mileage, rain, dirt, salt, etc.).

- To increase the service life of the bike, clean the bike chains and toothed belts regularly and lubricate the chain.
- Have the chain replaced by a professional bike workshop once its wear limit has been reached (see ➠ ***Chapter 20 "Bike chain"***).

27.8 Chainrings, sprocket wheels and jockey wheels

In bikes with derailleur gears, the sprocket wheels, chainrings and jockey wheels are subject to function-related wear. The extent of the wear depends on care/maintenance and how the bike is used (mileage, rain, dirt, salt, etc.).

- To increase the service life of the bike, you should clean and lubricate these parts regularly.
- Have them replaced by a professional bike workshop once their wear limit has been reached.

27.9 Lamps of lighting set

Bulbs and other lamps are subject to function-related wear and therefore may need to be replaced.

- In case you need to replace damaged bulbs, always carry spare ones with you.

27.10 Handlebar tapes and handle grips

Handlebar tapes and handle grips are subject to function-related wear and therefore may need to be replaced.

› Check regularly that the handles are securely seated.

27.11 Hydraulic oils and lubricants

The effectiveness of hydraulic oils and lubricants decreases over time. If lubricants are not replaced, this increases the wear of the relevant components and bearings.

› Clean and relubricate all relevant components and bearings regularly.

› Have the brake fluid for disc brakes checked regularly, and replaced if necessary.

27.12 Gear-shift and brake cables

› Carry out regular maintenance on all Bowden cables.

› Have defective parts replaced at a professional bike workshop. This may be necessary especially if the bike is often left outdoors and is exposed to the effects of the weather.

27.13 Paint finishes

Paint finishes require regular care, this also ensures that your bike looks good.

› Check all painted surfaces regularly for damage and touch up immediately if required.

› Consult your specialist cycle shop for advice on how to care for your bike's surface finishes.

27.14 Bearings

All bearings on the bike, such as the headset, wheel hubs, pedals and bottom brackets, are subject to function-related wear which depends on the intensity and duration of use and how well the bike is looked after.

› Check these parts regularly.

› Clean and lubricate them regularly.

27.15 Sliding bearings and bearings for full-suspension frames, suspension forks or other suspension elements

The suspension components on the bike, particularly the sliding bearings, bearings and suspension elements, must cope with very high stresses compared to the other bearings. They are therefore subject to a high degree of wear.

› Check these parts regularly and thoroughly.

› Observe the enclosed user manual from the manufacturer.

› Your specialist cycle shop can advise on how to look after these sensitive components, and also on how to replace them if necessary.

To find out more important information on maintenance of wear parts, visit the Internet pages of the relevant component manufacturer. The link list in ➠ ***Chapter 29*** provides an overview with links.

28 Regular inspections

As the spokes settle, the length of the brake and shifting cables increases and the bearings will run in during the first kilometres on the bike, you will have to have an initial inspection carried out by your specialist cycle shop after the first 200 kilometres, or after four to six weeks. This is also important for the acceptance of claims made under the terms of the warranty.

› Clean your bike after every offroad ride and check it for damage.

› Have the initial inspection carried out.

› Inspect your bike roughly every 300 to 500 km, or every three to six months.

› During this inspection, check that all screws, nuts and quick-release devices are securely fastened.

› Clean your bike.

› Grease moving parts (apart from brake contact surfaces) according to instructions.

› Have paint damage and rust spots touched up.

› Apply corrosion inhibitor to bare metal parts (apart from brake contact surfaces).

› Have inoperative or damaged parts replaced.

28.1 Inspection schedule

28.1.1 Maintenance / checks

After the first 200 kilometres following purchase, and subsequently at least once a year

› Have the following checked:

- tyres and wheels.

› Have the tightening torques of the following checked:

- handlebar,
- pedals,
- pedal cranks,
- bike saddle,
- seatpost and
- fastening screws.

› Have the following components readjusted:

- headset,
- gearshift,
- brakes,
- suspension elements.

after every ride

› Check the following:

- spokes,
- rims for wear and true running,
- tyres for damage and foreign objects,
- quick-release devices,
- function of gearshift and suspension,
- brakes, hydraulic brakes for leaks,
- lighting and
- bell.

after 300 to 500 kilometres

› Have the following checked for wear and replaced if necessary:

- bike chain,
- sprocket,
- sprocket wheel,
- rims and
- brake pads.

› Clean the bike chain, chainring and sprocket wheel.

› Lubricate the chain using a suitable lubricant.

› Check that all screw connections are secure.

after 1000 kilometres

› Have the brake hub checked and, if necessary, lubricate the brake sleeve with brake sleeve grease or replace it.

after 3000 kilometres

› If necessary, the
  - hubs,
  - headset,
  - pedals,
  - shifting cables * and
  - brake cables

› should be
  - dismantled,
  - checked,
  - cleaned,
  - lubricated and,
  - if necessary, replaced by a professional bike workshop.

* Do not apply lubricants or oils to teflon-coated cable casings.

Following each ride in the rain

› Clean and lubricate the following:
  - gearshift,
  - brake (apart from brake contact surfaces) and
  - bike chain.

Not all lubricants and care products are suitable for your bike. Ask your specialist cycle shop which product you should use in each case. If you use unsuitable lubricants and care products, this can damage or impair the performance of your bike.

29 Link list

You can obtain important information on your bike and its components via these links. The relevant user manual is normally provided on the manufacturer's web pages, in addition to important tips for use and making settings.

www.rohloff.de

www.speedlifter.com

www.brooksengland.com

www.paul-lange.de/produkte/shimano

www.ritcheylogic.com

www.schwalbe.de

www.srsuntour-cycling.com

www.magura.com

www.sram.com

www.dtswiss.com

www.fullspeedahead.com

www.paul-lange.de/produkte/selle_italia

www.bike-magazin.de

www.tour-magazin.de

www.radfahren.de

www.tektro.com

www.fallbrooktech.com/nuvinci.asp

www.hebie.de

30 Technical data

30.1 Maximum permitted gross weight of bike

The maximum permitted gross weight of the bike comprises the weight of the bike, the weight of the rider and the weight of the luggage. It also includes the laden weight of a trailer.

BIKE TYPE	MAXIMUM PERMITTED GROSS WEIGHT	WEIGHT OF RIDER:
20" trailer	50 kg	
20" child's bike:	60 kg	
24" child's bike:	80 kg	
Urban bike, city / trekking	130 kg	max. 115 kg
Urban bike, semi XXL	150 kg	max. 135 kg
Urban bike, XXL	170 kg	max. 155 kg
E-Bike	130 kg	max. 105 kg
E-Bike semi XXL	150 kg	max. 125 kg
E-Bike XXL	170 kg	max. 145 kg
MTB (hardtail)	110 kg	max. 100 kg
MTB (hardtail), semi XXL	140 kg	max. 125 kg
MTB (dirt)	110 kg	max. 100 kg
MTB (full-suspension)	110 kg	max. 100 kg
MTB (full-suspension), semi XXL	140 kg	max. 125 kg
Road bike	110 kg	max. 100 kg
Road bike, semi XXL	135 kg	max. 125 kg
Cyclo Cross / Cyclo Cross Trekking	110 kg	max. 100 kg

The maximum permitted gross weights of carbon frames also apply for aluminium frames.

If other gross weights are approved, for lightweight construction components for example, this will be indicated on the bike or component.

30.2 Maximum permitted loading of pannier rack

Note that the data on your pannier rack or in the manufacturer's user manual may be different.

Maximum weight loading of front pannier rack:

- Loading area above wheel: 10 kg
- Low loading area: 18 kg

Maximum weight loading of rear pannier rack:

- 20" child's bike and trailer: 10 kg
- 24" child's bike: 18 kg
- Touring bike, city bike, trekking bike, ATB: 25 kg

30.3 Tightening torques for screw connections

Only use a suitable tool, a torque wrench for example, to tighten the screw connections as otherwise the screws could shear off or break.

If you tighten screws too tightly, this could damage the components

You should therefore always observe the prescribed tightening torque.

Observe the minimum screw-in depth. For hard aluminium alloys this is at least 1.4 times the screw diameter (e.g. nominal diameter M 5 × 1.4 = 7 mm).

Whenever possible, you should tighten all safety-relevant screw connections using a torque wrench. This indicates the tightening torque in Nm (Newton metres) in each case.

› If no values are indicated on the component, use the tightening torques in the following table.

› If the torque has been specified by the manufacturer of the component, this has priority.

› Carbon parts must be mounted using a special mounting paste.

Also note other information or markings on carbon components regarding the recommended torques.

	SCREW CONNECTION	THREAD	TIGHTENING TORQUE (NM)
General	Crank arm, steel	M8x1	30
	Crank arm, alu	M8x1	30
	Pedal	9/16"	30
	Axle nuts, front	gen.	25
	Axle nuts, rear	gen.	30
	Stem expander bolt wedge	M8	23
	Stem, A-head, angle adjustment	M6	10
	Stem, A-head, handlebar clamping fixture	M5 / M6 / M7	M5: 5 / M6: 10 / M7: 14
	Stem, A-head, head tube	M5 / M6 / M7	M5: 5 / M6: 10 / M7: 14
	Bar end, outer clamp	M5 / M6	M5: 5 / M6: 10
	Seatpost, clamp	M8	20
	Seatpost, clamp	M6	10
	Seatpost, saddle clamping bracket	M7 / M8	M7: 14 / M8: 20
	Front derailleur clamp	M5	5
	Brake, pad	M6	10
	Brake, cable clamp	M6	10
	Sidewall dynamo, fixing	M6	10
	Derailleur hanger	M10x1	16
	Bottom bracket	BSA	according to manufacturer's instructions
	Disc brake calliper, Shimano, IS and PM	M6	6 to 8
	Disc brake calliper, AVID, IS and PM	M6	8 to 10
	Disc brake calliper, Magura, IS and PM	M6	6
	Shifting lever clamp	M5	5
	Brake lever clamp	M5	5
	V-brake, fastening screw	M6	10
	Road bike brake	M6	10
	Freewheel fastening screw	n. a.	40
	Cassette, lock ring	n. a.	30
	Handles, screw-on type	M4 / M5	M4: 3 / M5: 5
Carbon	Carbon frame, saddle clamp	M5 / M6	5
	Carbon frame, water bottle holder	M5	5
	Carbon frame, front derailleur clamp	M5	4
	Carbon handlebar, shifting lever clamp	M5	3
	Carbon handlebar, brake lever clamp	M5	3
	Carbon handlebar, handlebar clamp	M5	5
	Carbon handlebar, stem clamp	M5 / M6	5

Overview of torques, values apply for standard screws

30.3.1 General tightening torques for screw connections

The screw grade, e.g. 8.8, is embossed in the screw head.

Unless otherwise specified by the manufacturer, the following tightening torques (average values) apply depending on the screw grade:

GRADE / THREAD	V2A / V4A	8.8	10.9	12.9
M4	3	2.7	3.8	4.6
M5	5	5.5	8	9.5
M6	8	9.5	13	16
M8	20	23	32	39
M10	40	46	64	77

30.4 Tyres and tyre pressure

The recommended tyre pressure is stated in either bar or PSI.

The following table shows standard values converted, and also information on which tyre widths these pressures normally apply.

TYRE WIDTH in mm	PSI	BAR
25 HD*	80 – 110	5.5 – 7.6
28 HD*	70 – 80	4.8 – 5.5
28	60	4.1
32	60 – 70	4.1 – 4.8
37	50	3.5
40	60	4.1
42	60	4.1
47	40 – 50	3.5 – 4.1
57 – 62	30 – 40	2.1 – 2.8

* HD = high-pressure tyre

Note that the manufacturer's specifications may differ and must be observed as otherwise you could damage the tyres and inner tubes.

30.5 Lighting set

Depending on which type of lighting set is fitted on your bike you may require different spare lamps. The following table shows which bulbs you require.

TYPE OF LIGHTING SET USED	POWER SUPPLY	
Front light	6 V	2.4 W
Front light, halogen	6 V	2.4 W
Rear light	6 V	0.6 W
Rear light with stand light	6 V	0.6 W
Lighting with LED lights	LED lights cannot be replaced	
Dynamo	6 V	3 W
Hub dynamo	6 V	3 W

31 Warranty conditions

Read ➠ ***Chapter 27 "Care and maintenance of the bike"*** carefully. Comply with the inspection and maintenance intervals specified in ➠ ***Chapter 28 "Regular inspections"*** . Compliance with the service intervals is a prerequisite for the assertion of warranty claims.

The statutory warranty period is two years. This starts when the bike is handed over by the specialist cycle shop who is also your contact partner for warranty claims.

As proof of purchase and date of handover, please retain the handover document signed by both parties and record of purchase, such as the invoice and/or sales receipt, for the duration of the warranty period.

31.1 Prerequisites for the validity of warranty claims

- Manufacturing, material or information error.
- The problem or error already existed at the time of handover to the customer.

31.2 Warranty exclusions

A warranty claim applies only for the initial faultiness of the defective part. The following are excluded from the warranty:

- Damage caused by use in competitions, improper use and force majeure (see ➠ ***Chapter 6 "Intended use"***).
- All parts that are subject to function-related wear, providing this is not a production or material fault (see ➠ ***Chapter 27.2 "Wear parts"***).
- Damage caused by incorrect or insufficient care and unprofessional repairs, conversions or replacement of components on the bike. This User Manual contains detailed information on how to look after your bike.
- Accident damage or damage caused by other external factors, providing this is not attributable to incorrect information or a product error.
- Repairs carried out with used parts or damage that occurs as a consequence of this.
- Special equipment or accessories or non-standard equipment; especially technical changes, i.e. to the gearshift system or the bike fork and frame geometries.
- Non-compatible add-on components that were not part of the scope of delivery at the time the product was handed over, or damage caused by unprofessional installation of these add-on components.

We hope you thoroughly enjoy using your new bike!

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